





o an outsider looking in, the videogame landscape of 1994 to 1995, as chronicled in issues 13 to 24 of Edge, and therefore in volume two of File, must look like a ridiculous place. Atari is preparing a CD-ROM attachment for its 64bit Jaguar console. Sega is releasing a 32X upgrade module for its 16bit Mega Drive, while also introducing its 32bit Saturn. The 3DO Company is making bold statements about technology set to supersede a console it has only recently introduced. Nintendo has its own 64bit technology lined up – using cartridges, not optical media, of course - but in the meantime is also rolling out a battery-powered console featuring built-in, never-before-seen (possibly for a very good reason) monochrome 3D display technology. NEC continues to attempt, and fail, to attract interest in its underpowered PC-FX platform. SNK is re-engineering its Neo-Geo console as a CD-ROM unit, correctly supposing that it might shift more games if they retailed at £40 a throw, not £200.

If there is any kind of clear, simple strategy being employed by any player in this era, it is by Sony, whose PlayStation console is not complicated by other hardware commitments or a lack of foresight, managing to be all things to everyone: a flexible, powerful platform with a forward-looking storage medium and a massmarket-friendly logo.

Which is not to say that the arrival of Sony's machine instantly renders its competitors' efforts redundant. Some great games continue to arrive on 3DO. For a time, Sega's Saturn doesn't look like anything other than another hulking success, especially to those whose gaming habits still involve visits to arcades, where the likes of *Virtua Fighter* provide proof of the company's ability to conjure up immediately engaging but deep experiences.

That isn't everyone. This period represents change, not only in the decline of the popularity of the arcade, and the consequences for home gaming, but in the bigger picture. Some of the players in this volume are already battered. By volume three, they will have no valid place in gaming's new order.















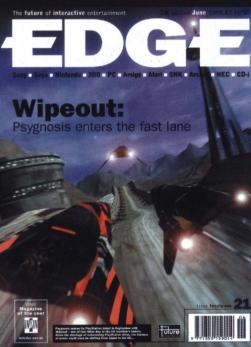














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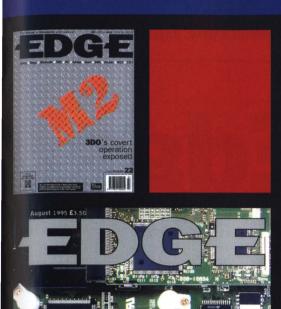
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a vocal supporter of

it nears completion, claiming that its capacity is well suited to the racing genre, something he'll be

exploring with Poly Poly Circus Grand Prix The cartoon-styled game looks appealing wonder what something with an

would look like?

Sony show first software, page 6... Saturn ready for orbit, page 10... New Model 2 coin-ops, page 10... Siggraph '94: the world's biggest computer graphics show, page 12... Namco broaden their horizons, page 16... The Future Entertainment Show, page 17

Cutting Edge

The latest **news** from the world of interactive entertainment

PlayStation: Sony The first PlayStation revealed revealed gameplan The first PlayStation software was recently revealed gameplan

PlayStation software was recently revealed to the Japanese press. Edge spent a day in the company of Sony

ony's prelaunch strategy for the PlayStation in Japan is to focus on software. The company recently held their second press event in Tokyo, during which Japaness games journalists (and **Edge**) were invited to see the preliminary line-up for the highly anticipated console.

Unlike the previous meeting in early May, no new details about the PlayStation hardware were furnished on this occasion, apart from the news that the CPU has been finished and the

system is now ready for manufacture. 'We've completed the prototype stage,' a Sony official told **Edge**. 'All we have to do now is set up the mass production system before we can go on sale.'

The R3000A CPU (a

MIPS-designed RISC chip that is already widely used in the computer sector) is now incorporated in a custom chip that also includes both the 3D coordinate algorithm processor (aka GTE) and the image data resolution processor. This is the result of a joint development between Sony Computer Entertainment and chip manufacturers LSI Logica, and, according to Edge's source, it means that the PlayStation will offer even greater performance than previously thought. 'It's so powerful now,' he quipped, 'that we almost feel we should lower the performance.'

Although Sony's hardware expertise is beyond question, doubts have been expressed in Japan about the number of titles that will be available at launch. Sony's preview of software in development took place in a large room containing rows of PlayStation development systems as well as a few finished units. 13 games were



SCE's Akasaka Oji building in Minato-ku, Tokyo, where Edge played the first softs



Namco's PlayStation *Ridge Racer* will include the link-up feature seen in *Ridge Racer 2* (arcade shot, above). A steering wheel is also planned

6

→ presented throughout the day; unsurprisingly, the most advanced titles were from Sony themselves, notably the polygon racing game, Poly Poly Circus Grand Prix, and a shoot 'em up entitled Philosoma (previously known as Ora-194).

According to Poly Poly's producer. Kazunori Yamauchi, racing games are 'the best genre to show off the capabilities of the hardware. Our ambition is to make this the world's best polygon racing game.'

The shoot 'em up, Philosoma, is more standard fare but does include some breathtaking special effects. It offers vertical and 3D sections as well as horizontal scrolling, and some nice scaling effects.

Anyone expecting to see Ridge Racer or any other Namco PlayStation projects was disappointed; the

company chose not to make any revelations, but Namco are known to be converting Ridge Racer as a PlayStation link-up game (a steering wheel accessory with proper feedback will also be available for lovers of the arcade experience). Those who've seen the PlayStation version in its current state claim that it's not arcade perfect but is still impressive.

Sony's event also gave Edge the first chance to try out the PlayStation's stylishly ergonomic controller (see Edge 11). Apparently, the pad - which nestles very well in the hand -

was one of the hardest aspects of the system to design; a final version was only chosen after ten different prototypes had been tested.

During the day, Edge also took the opportunity to look at the rear of the machine. Besides the serial port for





Bandai's Task Force Warrior Gundam (top) features shaded polygons, while Konami's Ultimate Parodius (above) relies on good old-fashioned sprites

link-up, and S-Video and Composite

an RGB socket, and a small plate

conceals an expansion socket for

PlayStation now pencilled in for December 9, only one small detail remains shrouded in secrecy: the price. A Sony spokesman recently told Edge: 'It will be less than ¥50,000 [£320],

and not close to ¥50,000. Potential PlayStation owners will just have to be patient.

sockets, the PlayStation also includes

connection to a hard drive or modem.

With the Japanese release of the

PlayStation software

At Sony's press conference Edge saw 13 different titles running on the PlayStation. A few, including a couple of polygon-based beat 'em ups, were shown but not allowed to be photographed. The remaining titles were: Task Force Warrior Gundam (Bandai) Ultimate Parodius (Konami) A.IV (Artdink) (see page 38) Metal Jacket (Pony Canyon) (see page 27) V-Zone (SCE) Crime Crackers (SCE) The Tale Of Poporokuroisu (SCE) Aquanaut (Artdink)



SCE's Philosoma mixes both

(top) with smooth 3D sprite

seamless transition (centre)

scaling (above). Rendered

horizontal and vertical scrolling

cut-scenes provide a stunningly











SCE's Poly Poly Circus Grand Prix features some exceptionally smooth polygons (60fps) and five different viewpoints. The finished game will include four different courses, five different cars, and, best of all, a head-to-head option in which two PlayStations can be linked together for play on two TV sets





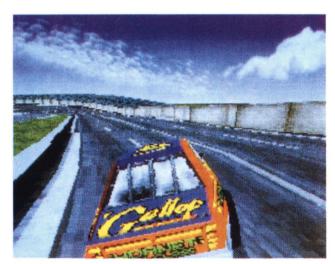
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make the machine

EDGE

Is it a good idea to show work-in-progress imagery from upcoming games when the imagery is so very... work-in-progress? Sega evidently believes so, releasing shots of a Saturn Daytona that, right now, amounts to little more than a tech demo. Whatever it ends up looking like, the sipplayer mode should be fun...

Sega on track The Japanese Saturn launch is approaching fast. Edge flags the Sega on track The Japanese Saturn launch is approaching fast. Edge flags the



Daytona USA is looking good, considering that it's only 10% complete. The game won't make it out in time for the launch

he roll-out of Saturn at the Tokyo Toy Show in June (Edge 11) raised doubts in some minds about whether Sega would be able to pull off the launch in time for November. Software was teething badly, few titles were playable to any recognisable degree, and all the controllers were attached to walls hiding bulky development stations rather than Saturn units. Of course,

this has been a familiar story at many hardware launches – things are rarely as advanced as companies would like them to be.

Now, a few months down the line, Sega

are in a position to start showing off some prime development projects. A central component of Sega's PR effort to build up Japanese support over the next couple of months is in-house coin-op division AM2, headed by Yu Suzuki. AM2 are currently converting the overwhelmingly popular (in Japan, at least) Virtua Fighter to the system, and work also on the Saturn version of the exemplary polygon shifter Daytona USA (shown here in its 10%-complete form) also began recently. Showing off titles at such an early stage of development is a crucial part of Sega's prelaunch strategy in Japan. Giving specialist gaming magazines the opportunity to trace the progress of popular arcade titles like these is one way of ensuring that fans of the arcade games stay interested, and hopefully buy the

Saturn when it's launched.

But Sega aren't just relying on arcade translations. One of the biggest titles to be pushed by Sega at launch will be Clockwork Knight, a game which →



division in Ohta-ku, Tokyo, is heavily involved with Saturn



Sega have plans to include a VR-style aerial perspective in the Saturn version of Daytona



It's possible to link up six Saturns – no doubt Sega will take advantage of this in *Daytona*



Daytona will push Sega's hardware to the limit – this rock face needs texturing, for a start

Off magazine October 1994

→ has been in development at Sega Of Japan for over a year. All the graphics seen in the game have been rendered using Softlmage's Creative Environment tools running on Silicon Graphics – an early SGI demo of the game was used by Sega's marketing department to sell the console to developers (and tease delegates at the Winter CES).

A pivotal factor in the development of software for Saturn is Sega's Titan arcade board. Titan has been developed primarily as a hothouse for arcade games which can then be quickly and easily ported over to the

Saturn (the first title will be Golden Axe: The Duel). As such, it shares much of the Saturn architecture while boasting a bigger memory and an even better sound board (Saturn's Yamaha sound board is one of the best around, by all accounts).

Both Saturn and Titan rely on architecture that is essentially 2D-based. Instead of a fully Z-buffered

3D environment, sprites are mapped onto geometry and scaled and distorted. Depth is assigned to the pieces, so it's possible to have walls and other objects scaling away into the distance (as seen in *Clockwork Knight*) and scrolling past in true perspective as the player moves.

178 companies have signed licence agreements with Sega, with the list







Who is it?

This man is spearheading the effort to confound the sceptics in the forthcoming battle for Christmas console sales. The price of the machine has now been set and you can buy one on the high street today



Clockwork Knight: Sega's flagship platformer, featuring 3D backdrops and some spectacular animation and character design, looks like one of Saturn's strongest launch titles. Set in a big American country house, the game features a wind-up doll as its central character



Virtua Fighter (above) is 40% complete and

now includes twice as many polygons as were seen at the Tokyo Toy Show. Victory Goal (top)

now including established Sony and Nintendo licensees Capcom, Konami and Namco. As was the case with the Mega CD, other hardware companies will be producing their own versions of the Saturn: only recently Hitachi announced that they would be manufacturing a Saturn-compatible machine, and it's thought that JVC (who are also involved with the production of the standard machine) will also turn out their own version, rather like the Wondermega and X'ye Mega CD combo.

With the Saturn now expected to hit Japanese shelves within a week of the launch of the PlayStation (probably beforehand) at a price of ¥49,800 (£320), Japanese players now face a tough decision. Of course for those with enough yen to spare, it will be no problem at all...

More far-from complete Sega mes get an airing, including a 60%ready Virtua Cop, as the company's dominance of the coin-op sector continues apace. 'Essential reading', meanwhile, casts a cynical eye at computer culture Really, how could people be so in love with technology?

Model 2: Sega's While home gamers wait for the Saturn, Sega's arcade programme continues anace

it is...

Sam Tramiel, president of Atari. The Jaguar represents his embattled company's last chance of survival in a hostile environment. A marketing campaign is being launched soon to convince punters to plump for the big cat

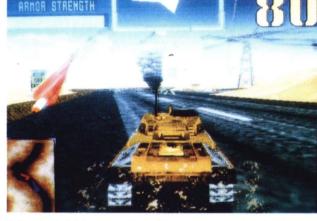
continues apace

s Sega Of Japan start firing up their hype machine in readiness for this November's assault on the Japanese console market, AM2, the company's coin-op development division, have unveiled their latest consignment of arcade games (incorporating both Model 1 and some Model 2 technology). With 3D technology now penetrating to all corners of the coin-op industry, Sega can't afford to rest on their laurels.

Two games rolled out recently for Japanese arcade fans were Desert Tank and Wing War. Wing War throws prospective fighter pilots into the cockpit of a variety of different aircraft, while Desert Tank players find themselves at the controls of a tank in the middle of a sandy skirmish.

Desert Tank is the second game to use Martin Marietta's texture-mapping board, one of the central components

of the Sega Model 2 IG (image generation) PCB that powers Daytona USA. This technology, which can handle around 300,000 polygons per second. offers greater 3D



Sega's Model 2-powered Desert Tank boasts stunning visuals and allows the player to view the action from one of three viewpoints

Not as impressive, but still firmly at the leading edge of low-end IG technology, is Sega's Model 1 board, which was first used in Virtua Racing and now provides the polygon generation for Wing War. This system allows you a certain degree of freedom to roam within a set perimeter (shown by the radar), but essentially you're flying on rails - Nintendo used a similar

performance than any current coin-

operated amusement hardware.

Other Model 2 games currently in development include the follow-up to

system in Starwing on the SNES.



Arcade giants Capcom are developing a home console based on their aging CP coin-op system. It's thought that Capcom are delving deep into their back catalogue of hits and converting some of them onto Mega Cartridges. These will feature on special multiplay arcade machines (similar to SNK's Neo-Geo MVS arcade boxes) and will also be pushed as software for a home system, possibly early next year.



This view (inset) allows the player to gauge exactly what's happening ahead. The cockpit view (above) is useful for close-quarter combat



Desert Tank uses a restyled Daytona cabinet complete with huge screen

magazine October 199









Sega's 60%-complete Virtua Cop (above), in which players have to try and infiltrate enemy hideouts, uses the same technology (Model 2) that helped make Daytona such a huge success

→ Virtua Fighter, as well as a Galaxian³style space shoot 'em up, and a
motion-based game incorporating
Sega's VR1 system which represents
the company's attempt to break into
the VR entertainment market.

Sega are also using the Model 2 board for their next big 'Virtua' coin-op, Virtua Cop. In this game you take the role of a Robocop-style law enforcer, infiltrating texture-mapped enemy bases. Currently only 60% complete, the game includes a full polygon landscape and even polygon-based enemies. Lousy scenario, predictable gameplay, but incredible graphics.

A full report on all the latest developments in the arcade entertainment field will appear in issue 15, when Edge reports from the JAMMA coin-op show at the Makuhari Messe in Chiba, Tokyo,



Two players battle for control of the skies in Sega's Model 1-based Wing War (above). The game is already number one in Japan

Essential reading

or most of us, there are computers and there are computer games. The first are interesting (usually) because they deliver the second. The second are interesting in their own right (naturally). Being sensible, rational creatures, we know that games are fun and the rest is useful. And then, of course, there are the Americans...

Wired and Mondo 2000 (from selected newsagents) are manuals for the California computer 'culture'. Both magazines presuppose that such a dreary phenomenon exists: a social group whose lifestyle, language and customs revolve around the currency of computers. But more than this, both attempt to bestow on this group an aura of radical chic, promoting its members as digital warriors plugged into the IT zeitgeist while the rest of the world languish in outmoded ideas.

Wired



- . Published by Wired USA
- £3.75 (e-mail: subscriptions@wired.com) ISSN 1059-1028

Wired, at least, is serious, offering a good array of interviews, product splashes and general techno-paraphernalia covering every conceivable sector of the (sometimes very

boring) business and consumer computer market.

Wired oozes a terminal self-consciousness, from the Mac masturbation of the design, to the smug jargonising, to the fact that all mail must be e-mail or be consigned to the cyberbin. It's erudite, stylish and dynamic, and has become the de rigeur accessory for the digitally fashion-conscious, but there's still too much that's just a neo-conservative pose – Val Doonican dressed in a data-suit.

Mondo 2000



- · Published by Fun City MegaMedia
- US\$5.95

(e-mail: subscriptions@mondo2000.com) ISSN: 74470 77997

Mondo 2000 is plain scary: an impenetrable kaleidoscope of drug-skewed philosophy, pixel-art and Net surfing for a readership that's probably booked wholesale for

cryogenic burial (along with the magazine). Doubtless someone, somewhere thinks that the random agglomeration of holographic clothing, tytamine hallucinogens and polygonal love dolls adds up to more than a good old laugh. They're wrong. And the publication of Mondo 2000's User's Guide To The New Edge (Thames & Hudson, £12.95, ISBN 0-500-27749-4) only makes matters worse. This lavish volume which seeks to explain the mag's crazy credo should come with a large sticker reading, in naked capitals: IGNORANCE IS BLISS.

It is October 1994 and already – already – **Edge** is making use of the internet to allow readers a more efficient way of getting in touch (just have a look at that

slick email address), not to mention endorsing online discussion forums. The likes of Amiga owners

and Atari may still submit complaints

via paper, though

viewpoint



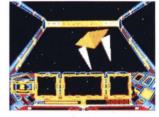
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ongratulations are in order for your article on Sony's new PlayStation. While other magazine had a photo of the console and a snap of the joypad, Edge gave us a full tech rundown, along with information on the RAM cards, plus a full release schedule and shots of the games in production. To top it all, there was even an interview with Sony and the other major players involved with the machine. The feature gave rise to a few questions, though. You mention that the PlayStation is compatible with MPEGI files, but will the ability to decode MPEG be built in, or will an add-on still be required to watch VideoCD? Also, what speed is the CD drive?

Retroview is really beginning to get on my nerves. Not

because I disagree with your reminiscences about a time when the emphasis was on originality and good gameplay, but because you consistently ignore the Amstrad CPC. All the games you have featured appeared on the CPC, yet it has not had a single mention. You talk about programmers pushing 8bit machines to their limits and producing effects which the manufacturers never thought possible and you always mention the Commodore 64, but effects produced on the CPC were much more impressive. The best example of what could be achieved is Logon Systems' The Demo. This still puts most Amiga demos to shame and can make plenty of PC stuff look tame.

Finally, I would like to put to rest all the myths about why



The original *Starfox*, which was converted to the CPC from the C64 (see Grant Taylor's letter)

Starfox was renamed Starwing here in Europe. The real reason is that in the mid-'80s there was a game on the CPC called Starfox, and Nintendo would have been in breach of copyright if they had released their own game with the title Starfox.

Grant Taylor, Rosyth

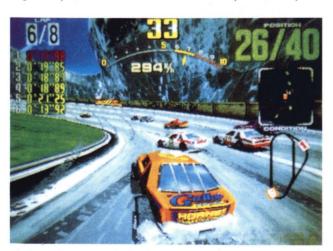
The PlayStation supports MPEGI as an option, and the CD drive is double speed (300K/sec). It also includes an 80MIPS data decompression engine which can decompress data on the fly directly into RAM. Thanks for setting Edge straight about the CPC, too. Amstrad owners the world over will now be able to take pride in the fact that their machines played host to the original Starfox. Although the C64 had the game first.

aving owned virtually every games platform, from C64 to 3DO, I feel there is a problem with the current trend towards gaming

that needs to be addressed: namely that every time new hardware is released it tries to reproduce the latest arcade games. Unfortunately, this always results in substandard 75%-accurate conversions for which we are expected to shell out in excess of £50. Current 16bit machines tried and failed to accurately reproduce the excellent sprite-scaling 3D arcade hits of recent years. Now, with the advent of new 32bit hardware, the trend continues. Not content to produce 100%-accurate conversions of great games like Out Run which the extra power of the new consoles would allow (a perfect conversion of Out Run would wipe the floor with any driving game available for home use), companies insist on trying to convert the latest dedicated polygon shunters and, as highlighted by Virtua Fighter on Saturn, are unable to reproduce them accurately.

The end result is that games never match the claims, leaving gamesplayers to suffer a constant stream of substandard conversions which, under this policy, will never be perfect, only adequate. There must be some progression, but not at the expense of quality, which I feel would improve if companies stuck to original titles and conversions within the limits of the hardware instead of wasting the extra power they offer reaching for the unattainable.

Hopefully, the situation will improve with the release of



J Cafferty thinks it's a waste of time and money trying to produce perfect conversions of coin-ops like *Daytona* for the new consoles

Sony's new hardware and its promise of amazing leaps in performance. Until then I shall continue to rely on **Edge** to help me weed out the few quality titles from the sea of rubbish currently available.

J Cafferty, Cambridge

True, few arcade games have ever been converted perfectly (Arkanoid on the Amiga is one exception, although the game itself was unmemorable), and as long as a rift exists between arcade and domestic hardware, that situation is unlikely to change. In the late '80s, games like PC Engine R-Type and Mega Drive Strider came close to replicating popular coin-ops, but arcade purists could spot the differences. Home technology will always remain in the slipstream of arcade systems because the arcade industry is technology-driven - there will always be something newer, faster and more exciting to pump money into. Even if Sony's machine can deliver an exact copy of Ridge Racer (a tad optimistic given the timescale Namco have, perhaps) it seems crazy to expect it when we still haven't seen a racing game on a home system that comes close to Out Run - a coin-op that's now getting on for eight years old.

It's good to see that

Edge has finally cleared up the story of who wrote Defender and Robotron for Williams – Eugene Jarvis rather than Eugene Evans, to whom Edge (and Archer Maclean) attributed the work a couple of





Edge's PS-X cover (right) attracted mixed reactions. Greg Longhurst liked it; others preferred the rendered images of previous issues (left)



The Samsung-branded 3DO is yet another addition to the already congested console market (see letter from Gary Osborne)

times previously. Eugene Evans is an old friend of mine and he was quite fascinated when I told him that apparently he'd written Defender. Then he checked his bank statement and realised that he couldn't have done.

Patrick Buckland (Programmer of Crystal Crazy for the Apple Macintosh)

Will the real Eugene 'Defender' Jarvis kindly make himself known...

ince I have been reading Edge, there has been little mention of the Internet and the services provided by it. With an increase in the number of PCs in the home, and networking becoming easier, more and more people have access to the network. Recently, ambient techno band Future Sound Of London did a two-hour live gig on Radio I while broadcasting video images onto the Internet.

It would be useful if **Edge** could provide information on the

network. It could describe some of the features available on the Internet, such as Usenet News, FTP, Mosaic, etc. Also, it would be good if you could provide an E-mail address for the magazine so that readers could send in mail via the network. Even an Edge bulletin board could be set up to provide news on upcoming features and updates on the computer scene.

I understand that your main priority is to sell magazines, but I think that introducing something like this may allow readers of **Edge** greater interaction with the magazine and could give you a larger readership.

> David Baumann, Dunstable

Agreed. Edge is already using the Internet to offer a better service to readers - letters, news and queries can be sent to future@cix.compulink.uk - but expect an updated E-mail address to appear soon. Also, conferences (such as the recent Edge conference on CIX) are great forums for discussion watch out for developments in that direction, too. There is, however, a limit to how much general Net info Edge could reasonably contain. That's where Future Publishing's newest magazine launch - .net - will fit the bill. Look out for it on October 26.

here are just too many videogames machines being produced at the moment, and there is going to be some hard competition once all these machines are released. With more and more electronics companies breaking into the

videogames market (Panasonic, Sony, Samsung, etc), do you think other companies, such as Aiwa, Toshiba or Sanyo, for example, will end up releasing games machines?

Gary Osborne, Middlesbrough

Aiwa are owned by Sony, so there is a possibility that they'll release a version of the PlayStation. Sanyo, Samsung and Goldstar are all committed to releasing 3DO players later in the year, but Toshiba are keeping quiet.

would like to congratulate **Edge** on the PlayStation feature in issue 11, and in particular on the cover (or should that be covers?). While some of the rendered images on previous covers have been spectacular (**Edge** 3 and 7 spring to mind), the use of a fifth-colour foil on a white background was seductive and stylish. It's just a shame that Sony chose to style the PlayStation on one of those trendy flat cookers.

Greg Longhurst, Hants

Well, Edge said it was a hot piece of kit. And talking about covers...

he worst thing about Edge recently has been the fairly boring covers. I can understand that you may feel that a plastic bag prevents you from using the magazine cover in any form of 'attract mode', and certainly, half of your readers would buy the magazine regardless of the cover, but what about the point-of-sale customer who is blissfully unaware of what Edge is all about?

The last three covers – Taos,
Trip Hawkins and the Sony PS-X
– have been unexceptional, to
say the least. Earlier issues
looked more attractive with
their sci-fi/cyberpunk imagery.
The contents of **Edge** are about
right, but the covers could do
more to generate interest. The
plastic bag – which is a good idea
and should be retained – could
be made partially clear so that
cover artwork could be seen
rather than just glimpsed.

While I appreciate that you want **Edge** to appear different to

viewpoint

the overbright, childish images of other magazines, it could be given more visual impact without losing any of its originality.

Just out of interest, why do there appear to be two editions of issue 11, the only difference being the size of the PlayStation on its cover?

Anonymous

Edge has no intention of abandoning rendered images yet — they're an essential part of the magazine's style. Do expect to see less of the bag in the future, though — one day Edge might be naked and vulnerable. There was no specific reason for issue I I's twin covers; Edge merely thought it would be an interesting experiment.

here were two major inaccuracies in your story in **Edge** 12 about the Jaguar CD-ROM European press conference.

Sam Tramiel was not there.
 The CD drive did not blow up.

Taking these two pertinent facts into account, your story does seem to be rather thin on facts. A product of the Sun school of journalism, perhaps? The European tour was actually extremely successful and ran very smoothly. While there were teething troubles with a CD-ROM drive (which turned out to be operator error) those things are as common to any press conference as typing errors are to any magazine. This story was extremely damaging and grossly unfair, don't you agree?

In the same issue Julian Roche expressed concern about Atari's

commitment to the Jaguar. I would like to take this opportunity to say to him:

Mr Roche, we are confident that your purchase of the Jaguar is the correct choice, and although we can understand your frustration and apologise for the delays, we can assure you that these are due to Atari's determination to ensure that games such as Alien Vs Predator live up to the expectation created by Jaguar and set a new standard by which others will be judged. By the time this letter is published you will be able to purchase Wolfenstein 3D, and the following choice will appear on shelves between September and October: AVP, Club Drive, Kasumi Ninja, Checkered Flag, Doom, Dragon, Zool 2, Theme Park, Syndicate and Ultra Vortex.

Darryl Still, Atari UK

The phrase 'blow up' was an unfortunate choice. It was not intended to create the impression that the CD-ROM drive exploded with some kind of spectacular pyrotechnical display, merely that it suddenly and embarrassingly - ceased to function. If the incident was indeed due to operator error rather than the shortcomings of the hardware, it's good news for Jag CD-ROM buyers. As for the absence of Sam Tramiel, this was a genuine slip-up on Edge's part. Apologies are due to both Atari and Mr Tramiel.

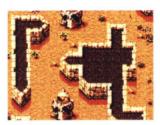
am confused. Your magazine is stated to be about 'interactive

Stoctos.4

Darryl Still, Atari UK's marketing manager, reassures Julian Roche (see Edge 12) that Jaguar games like Club Drive are worth waiting for

entertainment' on computers. One of the machines you list is the PC, yet the only Commodore machine you cover is the CD32. This is a contradiction, because the Amiga, as you keep telling us, is a games machine and is therefore part of the interactive entertainment world. The PC, on the other hand, is a 'professional' computer, and games are only secondary. I don't want to get into any petty 'my computer is better than yours' squabble, as I have used both systems and both have their qualities. What I don't understand is how you can keep saying you are unbiased and yet refuse to cover a machine on the grounds that you don't like it.

To prove my point about the Amiga deserving more coverage



These days, games like *Cannon Fodder* are rare on the Amiga (see Kevin Slamaker's letter)

than the PC in your magazine, let's look at an Amiga system that is comparable to the PC. If we take an A2000, give it a 33MHz 68040 CPU, EGS Spectrum 24bit graphics card, a GVP 16bit sound card and 8Mb of RAM, then we have a system that would make the PC look as if it was standing still. The graphics card can display and update 24bit pictures and animations in realtime – try getting that on any other system.

As you can see, it is not the technology or the hardware that is failing the Amiga but Commodore's marketing strategy. If you did your research you would know that the Amiga was developed in the early 1980s. The IBM AT and XT are a similar age, yet while there are very few of those used professionally today, the A500 keeps going. I own both an Amiga and a PC, and use the PC only because it still has a fixation on the past and is not willing to move on. Evolution will take its toll and as long as the Amiga is not let down by Commodore we shall see who has the last laugh in the years to come.

Stop trying to discredit the Amiga as you are only making fools of yourselves every time you are corrected by your readers when you make a blatantly false remark about something you obviously don't do your research on.

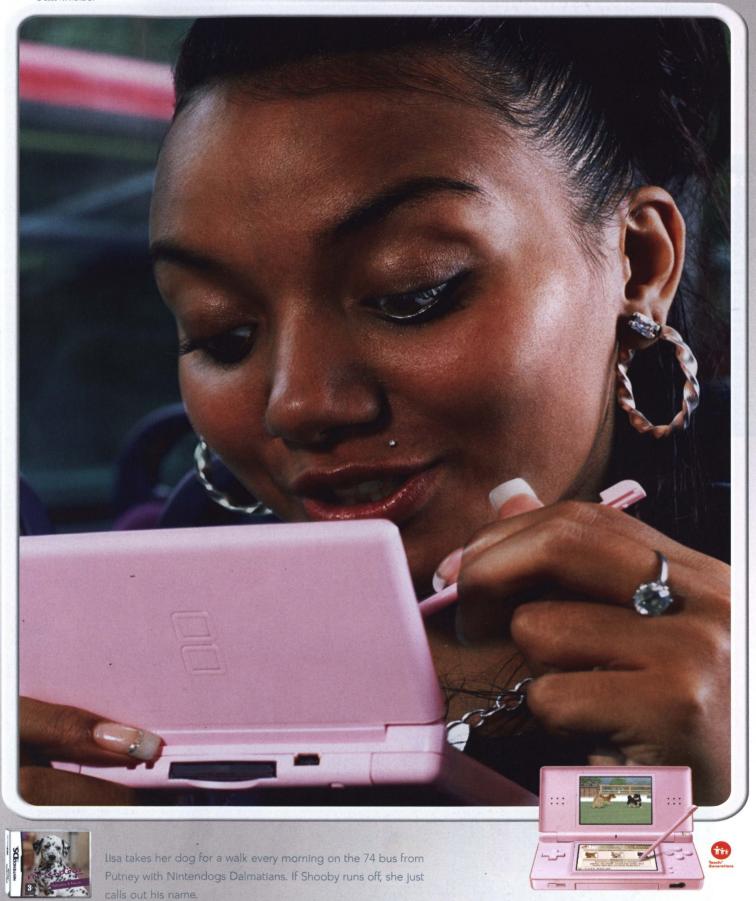
Kevin Slamaker, Perth, Australia

Edge does not dislike the Amiga, nor is it ignorant of its history. In fact, two of the team still hang onto their A500s because of its library of classic games. But the reality is that the golden days of the Amiga as a games machine are well and truly over - software houses have stopped developing for the machine because the PC embraces a much wider global audience. Citing the technical superiority of high-end Amigas is a weak argument for greater Amiga coverage - if the hardware isn't taken advantage of by games developers, how can Edge justify giving it as much space as the PC? As it stands, the PC can look forward to many exciting games; the Amiga, on the other hand, can't.

t's strange that you seem to completely ignore the subject of game pricing. You frequently mention the price of the hardware, but as we all know it's the software that sells the kit. I have been encouraged by two points in this area. Firstly, that the CD³² is getting budget software - some as low as £15. The second promising aspect is that Sony are proposing to price their software at around £30. This sort of pricing is very important. It doesn't matter how good a game is; if it costs £50, you can't justify it.

Neil Aubin, Winslow

there are many factors involved that make it a virtually impossible target. Sony may be able to keep their own PlayStation software as low as that, but thirdparties—who have to pay higher licensing and manufacturing fees—will find it very difficult. Until CD games start selling in the millions, there's little scope for prices to drop.





g speak to play





The most distinctive-looking title of 1994?
Probably, considering realtime-rendered ellipsoids are hardly traditional videogame building blocks, even on PCs. Ecstatica bucks other trends, too: who would expect a werewolf to, rather than sink its teeth into your tasty flesh, repeatedly punch you in the face, for example?





Ecsiatica

Ecstatica is a cinematic 3D adventure with realtime appeal. **Edge** meets the duo reinventing the interactive movie

Format: PC CD-ROM
Publisher: Psygnosis
Developers: A Spencer
A Maindron

Release date: Nov '94

Origin: UK

A

ndrew Spencer admits that he's not really interested in computers. 'Sometimes I

even get lost in my own game,' he confesses. This seems a strange statement for a programmer to make, but Andrew is not your average jobbing coder. As sole programmer of *Ecstatica*, he is the creator of what is potentially one of the most exciting and technically innovative PC games this year.

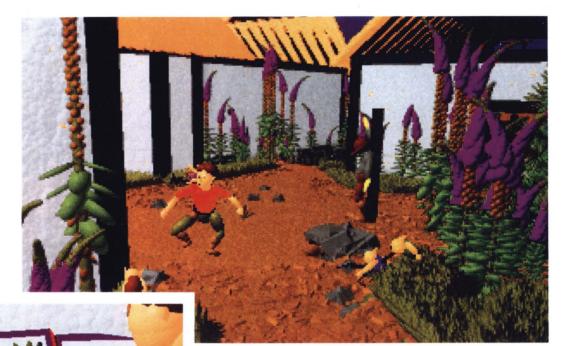




The Programmer and The Artist: Andrew Spencer (left) and Alain Maindron, the creative partnership behind *Ecstatica*

Before he even started producing the game, Andrew laboured for three years doing the spadework for it, a process which began on a Commodore 64 shortly after the release of his only

prescreen



The detail in many of the external locations is breathtaking (above). These plants are all unique (they also provide a range of good hiding places). Locating spell components (left) is vital to defeating the tougher enemies

other well-known program, the best-selling International Soccer for the C64. 'The whole philosophy of Ecstatica is to separate creativity from programming,' he explains. To this end he devised one of the most advanced software development tools in the world, which, when finished, enabled him to concentrate on the overall design of the game without getting bogged down with the nuts-and-bolts process of programming the graphics.

After having spent so long nursing it to its current state, Andrew is understandably wary of revealing precise details about his system. However, his three years' work is evident in Ecstatica (which has taken a further two years to bring to its current state). The game is different to other 3D titles - such as Alone In The Dark - in that instead of employing polygons to create 3D images, its graphics are composed almost entirely of ellipsoids (although some triangles are also used). Not only does this allow the creation of more realistic-looking characters with soft, rounded and aesthetically pleasing shapes, but it also allows a far more effective impression of movement than can be achieved

with polygons. Andrew is convinced of the logic of his approach: 'Mickey Mouse used circles because they are the easiest shape to keep constant from one cel to another,' he argues. 'The use of ellipsoids lets us take this a step further.'

Most of the time Andrew spent developing the system was devoted to trying to make movement as natural as possible. The system, based on the technique of 'inbetweening' in which a start and an end frame are supplied and the computer provides the frames in between according to the user's instructions, is remarkably efficient at producing both the basic characters and frames of







Ecstatica's horrific atmosphere doesn't preclude touches of humour. Imps swing down from buildings to try and knock you over (left). A rotund woman attempts to force herself on you at every opportunity (centre). A case of flatulence helps this pig guard the entrance to a room

EDGE

magazine

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1994



Pre-set animations will feature in Ecstatica, but most will last only a few seconds, allowing the plot to develop without jeopardising interactivity

animation: smallish objects require one to two hours of work to model and a similar amount of time to animate, while a major character may take around a day to create, with mapping out its movements occupying only a further two days at most. This is a fraction of the time taken using conventional animation techniques, and the results, according to Andrew, are better. The work behind it all is apparent in the pages of seemingly

game itself. He cast around for suitable collaborators and eventually met Alain Maindron through a mutual friend. Alain, a professional animator who has worked on such films as American Tales 2 using traditional cel techniques, had never used computer-based animation methods before. He was, however, immediately impressed with Andrew's system. 'Inbetweening is impossible to do properly with 2D characters

'The writing's on the wall for films as the pre-eminent form of entertainment. They will be replaced by games in the foreseeable future'

incomprehensible algebra which Andrew ruffles through nonchalantly while he's talking.

This achievement is especially impressive when you consider that Andrew is almost completely self-taught, although he spent a brief period as a Cambridge maths student and subsequently failed a computer science degree at York University. 'Cambridge didn't really teach me anything,' he maintains. 'I was already fairly good at maths.' A good job, too: Ecstatica is an extremely maths-intensive program.

When the system was finished, Andrew realised that he would need help to produce the

because the computer does not have enough information to go on. With threedimensional characters such as these, however, it's much faster and more flexible than any traditional method,' he enthuses.

Andrew may have created the technical foundation for Ecstatica, but it was Alain who provided the imagination, bringing a cinematic philosophy and his considerable film experience to the project. 'We immediately decided that we didn't want to create a game in the traditional sense,' asserts Alain. Both men firmly believe that videogames will increasingly take on the traditional role of films, and their intention from the beginning was to create something incorporating cinematic qualities.

Building a 3D world

All the static locations in Ecstatica were created using the same five-stage process (below, from top).

First, the backgrounds are pieced together by Alain, using simple building-block shapes. It is at this point that the camera angles are selected, with the main criteria being visual impact and cinematic feel.

Next, the basic textures are added. This provides an indication of how the finished room will look and offers a chance to redesign any aspects.

In the third stage, anti-aliasing is employed to

enhance the texture mapping. This smoothes edges and increases the number of colours to make the light sourcing more realistic.

The fourth stage sees the addition of the room's fixtures and fittings. These are created using ellipsoids, like the characters, and are designed to give each location a unique atmosphere.

Finally, moving objects (in this case the candle flames) and the characters themselves are added. These are 'layered' so that objects closer to the screen pass in front of more distant ones.



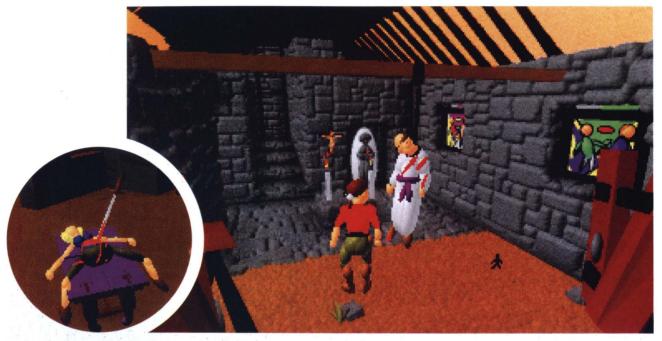








prescreen







Throughout your travels you're reminded of the current situation in the village and its environs (middle). This werewolf is the bane of your early explorations (above)

A hanged and mutilated priest is discovered in his ruined church (above). Ecstatica's violent scenes (left) are definitely not for the squeamish

'The writing's on the wall for films as the pre-eminent form of entertainment,' says Andrew. 'They will be replaced by games in the foreseeable future.'

This thinking had a significant effect on the development of Ecstatica's gameplay. 'We've aimed to get people totally involved in Ecstatica,' says Andrew. 'Menubars, boxes and statistics are the scourge of atmosphere in games so we've designed the system to work without them. We want people to forget that they're playing a game.' (One result of this is that, instead of objects and weapons being accessed via separate screens, your character carries everything he possesses in his own hands.)

In Ecstatica, Alain has

created a believably horrific fairy tale using cartoon-like characters an unusual but remarkably effective combination. You play a weary traveller searching for water after many hours in the saddle. Leaving the beaten track, you stumble upon a mysterious village high up on a plateau. After confronting a series of bizarre

monsters, you realise that the village is devoid of human inhabitants. As you progress, the game unravels into a phantasmagorical tale of love, torture and rescue.

The game world consists of over 250 interconnecting locations, many of which are subdivided into smaller areas, encompassing the village, the surrounding fields, the local castle and various other nearby buildings. Texture mapping is used throughout to accurately reflect the character of each location.

The quality of the game's visuals is readily apparent, with Andrew's ellipsoid characters making a significant contribution anyone who has railed against poorly digitised actors laid on top of unimaginative rendered backgrounds will find Ecstatica refreshing. Basic characters like the bat and the seagull are essentially one ellipsoid with a couple of triangles for wings (although they're none the less effective for their simplicity), while major figures, such as the werewolf and the game's hero, are generated by overlapping up to 80 ellipsoids plus triangles. The result



The sense of scale provided by some locations is excellent. The camera angles are designed to show each room's best features while retaining playability

is greater variety, higher detail and more realistic animation than PC gamers will be used to. And it's not just the characters which benefit from such high aesthetic values; the backgrounds are equally sumptuous.

Alain's movie background is evident in the game's variety of meticulously planned camera angles. He has also created 700-800 special animated sequences, calculated on the fly rather than pre-stored, which play when you attempt certain actions. Alain's intention is to integrate these scenes so effectively with

be accommodated on the CD, and these will probably take up at least the same amount again.

To provide the sound for *Ecstatica*, the game's producer, Greg Duddle (on behalf of the publishers, Psygnosis) brought in professional actors and sound effects technicians. Fearing that using outsiders would dilute his and Andrew's original vision, Alain himself provided a complete set of dialogue and sound effects which the professionals could imitate, thus ensuring that the atmosphere of the game would be preserved. The soundtrack is not yet finished,

Anyone who has railed against poorly digitised characters laid on top of unimaginative rendered backgrounds will find *Ecstatica* refreshing

the gameplay that the player won't even notice he's lost control; if the player is just left sitting in front of the screen wondering why he's having to watch the same piece of unnecessary animation yet again, Alain knows he's failed.

Neither the scenery nor the characters are compressed, which means that *Ecstatica*'s graphics currently swallow an 80Mb chunk of the CD upon which the game will be released. This figure is bound to rise as anti-aliasing adds more colours to the characters. The sound and voices have yet to

but Andrew maintains that it will 'scare the shit out of people'.

Ecstatica will almost

certainly be released bearing an '18' certificate. The game does contain some fairly graphic images — hanged priests covered in blood, girls impaled on swords, your character being systematically punched in the face by a werewolf — but they're not gratuitous. Scenes like this are essential to the plot, and without them the game would lose much of its impact.





All the character animation is very smooth (top). In the monastery, two monks pray before a crucifix (above)

Even before *Ecstatica* is complete, Andrew is looking to the future; he already has plans to release a follow-up, probably with a more contemporary theme. 'I haven't spent the last five years creating just one game,' he says. 'I now have this system and there will be sequels.' He is also reluctantly considering leasing his development tool for use in other people's games, but won't be drawn on whether he has intentions to create his own games for other systems.

It's a striking indication of the way the games industry is changing that a title like *Ecstatica* is the brainchild of two people who admit to never playing videogames. If *Ecstatica* is successful, we can expect the tentative relationship between the videogame and film industries to develop into a much closer union.

Credits

Programmer: Andrew Spencer
Animation/storyline: Alain Maindron

Producer: Greg Duddle

Music and sound FX; Pearl Studios
Sound co-ordination: Phil Morris

testscreen

Road Rash



High-powered motorbikes, texture-mapped raceways, music from the likes of Therapy?, and plenty of violence: the recipe for an Edge 9/10. The self-styled multimedia console may carry a US\$700 price tag, but with EA serving up games like this and Madden, there are a handful 3D0 seriously.

Format: 3D0

Publisher: EA

Developer: In-house

Price: £50

Size: 1 CD

Release UK: Out now

lectronic Arts have clearly adopted a two-pronged strategy for the 3DO. As well as developing original titles for the machine – Twisted, Shock Wave and Monster Manor – they're also using its capabilities to enhance proven products like John Madden Football, FIFA Soccer and Wing Commander. The company seem to be saying to gamers: 'Try this and tell us what you think, but in the meantime here's something we know you're going to like.'

Road Rash falls into the latter category. A motorcycle racing game combining excellent

graphics with exhilarating gameplay, it achieved phenomenal success on the Mega Drive a few years ago and remains one of the best games for the system. Given this track record, one would expect the 3DO conversion to be a solid, playable game. What no-one could have predicted, though, is that it would be *this* good.

The 3DO version of Road Rash is more than a game; it's a fully fledged cinematic production. The experience begins with a CinePak bike chase sequence, accompanied by the pulsating chords of the Road Rash



The Pacific Highway (above) is one of the most sinuous roads you'll ever encounter. Danger could lurk around any corner, and usually does. Travelling on the wrong (ie left) side of the road when travelling at high speed through narrow, dimly lit tunnels (inset) is not advisable

Pearl Player 1 Player 1

A policeman attempts to dislodge a speeding biker in the Napa Valley (above). The Peninsula level is full of hills, as well as rival bikers (inset)

theme song, Soundgarden's 'Rusty Cage'. (The front end also includes a couple of superb MTV-style grunge rock videos.) Slick it may be, but EA haven't made the classic mistake of lavishing more attention on the intro than on the action. It is, after all, only an intro, and is there simply to serve as a enticing prelude to the real event: the game itself.

Road Rash contains five separate tracks, each one different in terms of scenery, traffic volume, etc. There are also five selectable player levels which dictate the toughness of the opposition and the length of the tracks the easiest track stretches only five miles, while the hardest is up to 17 miles long.

The game also incorporates two playing modes. 'Thrash' offers an immediate pick-up-and-play scenario that lets you select any combination of track and player level. But it's the 'Big Game Mode' that constitutes the game's main course. First you assume the character of one of the game's eight resident riders. Then you select one of the five courses to race on - these range from the dizzy heights of the Peninsula to the hustle and bustle of the City. And then you hit the tarmac. The object is simply to finish among the first three contestants in any race, which allows you to move on to the next, more difficult, course.



The City (top) is home to rushing cars and ambling pedestrians. The roads of the Sierra Nevada (middle) are treacherously twisty. The Pacific Highway (above) is characterised by narrow roads and lots of tunnels

One of the things that distinguishes Road Rash from other, more sedate, racing games (apart from the fact that you're a pair of wheels short) is the attitude of your rivals. The other riders in the race conform to every biker stereotype in the book: they're all chain-wielding maniacs who would sooner split your face than suffer the indignity of having you pass them, and who are prepared to do whatever it takes to stop you reaching the finish line first, even if it means cracking you over the head with a metal pole or kicking your bike out from underneath you. Thankfully, you can give as good as you get: there's nothing more satisfying than exchanging heavy metal with a rival biker while dodging traffic in an urban landscape and then kicking him straight

Five levels

The five courses on offer are: The Peninsula, Pacific Highway, Sierra Nevada, Napa Valley and the City. As you progress through the levels, the courses get longer and the landscapes more impressive.

testscreen

The City is full of joggers, irate motorists and law-enforcement officers. The Peninsula and Sierra Nevada don't offer much in the way of obstacles, but the roads themselves are challenging enough not to need them. The Napa Valley has the widest roads (sometimes stretching to five lanes), while the Pacific Highway contains the most spectacular scenery.



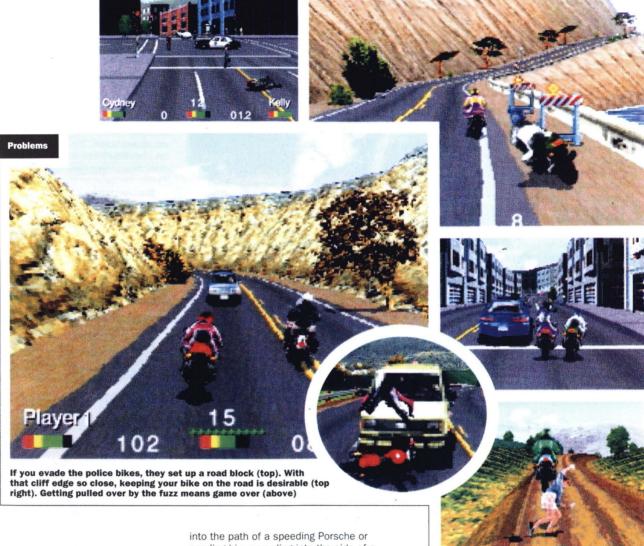






As well as bike footage (which took 40 people two months to shoot) Road Rash offers music from A&M artists such as Paw, Therapy?, Soundgarden, **Hammerbox and Swervedriver** (the latter band represented by 'Duel' and 'The Last Train To Satansville'). Excellent stuff

testscreen



into the path of a speeding Porsche or sending him sprawling into the side of a building. (Although this is not to be recommended in real life, of course, as the ludicrously stuffy in-game caution advises.)

Such excitement is only possible because of the exemplary way in which *Road Rash* plays. Your bike is responsive and controllable and gives you the confidence to take risks. You soon find yourself pulling stunts like weaving between passing cars and playing chicken with oncoming vehicles, swerving aside at the last minute to avoid joining the flies on someone's radiator grille.

Thankfully, your bike no longer exhibits a tendency to crash after hitting even the most minor obstacle – a problem that severely affected the pre-pro version **Edge** saw a few months ago (issue 8). Now, instead of tipping you head-first onto the tarmac every time you brush against a tree or a car, your machine just keeps going, subject only to a slight loss of speed. Of course, if you hit a huge truck

Win a race by any means necessary, even if it means taking out the local populace

head-on at 120mph the game isn't so forgiving, but luckily, you can buy a new bike from the money you get for finishing a race.

Road Rash's graphical beauty is self-evident. In fact, the detail packed into the gloriously textured backgrounds is so appealing that they tend to distract you when you're playing the game – you often find yourself admiring the scenery when you should be keeping your eyes on the road ahead. What can't be conveyed by these static screenshots is the smooth 3D update (around 20fps) and the sheer thrill of pelting along undulating, winding roads at ridiculously high speeds.

And, not content with making the backgrounds look stupendous, Electronic Arts

have contrived to make them truly interactive. If you find yourself on the wrong side of a road barrier, for example, you can't just ride through it; you have to wait until a gap appears. Similarly, if you fancy a break from the blacktop you're allowed to venture a fair way into the roadside scenery - although that doesn't stop the police from finding you if you've transgressed. There's also a significant degree of artificial intelligence incorporated in the game: pedestrians hurry to avoid your speeding bike (usually in vain), cars stop at red lights, and the other bikers try to beat each other up.

Road Rash's only potential flaw is its game structure. Giving the player access to all the levels from the outset in the Thrash mode detracts slightly from the 'proper' game hacking through the levels knowing what lies in store is never quite as exciting as taking each level as it comes. Fortunately, though, the exhilarating action more than compensates for the lack of scenic surprises.

Electronic Arts have managed to blend the unadulterated exhilaration of a coin-op like Sega's classic Super Hang On with deeper and



In Big Game Mode, it's essential to choose the best machine for each level (above and right). You do this courtesy of a slick pre-rendered fly-by

more rewarding gameplay, and it's this combination that makes 3DO Road Rash so enjoyable. With the exception of John Madden Football, Road Rash is arguably the best 3DO game currently available. It looks fabulous, it sounds fantastic (the music tracks are genuinely good enough to listen to on their own merit) and it's heart-stoppingly playable. Road Rash gives 3DO owners a reason to feel proud.



Nine out of ten



The backgrounds in Road Rash are more than just pretty. This barrier (above) is actually part of the game; rather than just going 'through' it, which you'd be able to do in many racing games, you have to wait for a break. Sometimes the road splits in two (insert), with one route offering a short cut



testscreen





Road Rash contains 30 minutes' worth of FMV: the local bobby (middle); having a smoke (above)

Earthworm Jim



Issue 13's Earthworm Jim cover illustration may be a splendidly juicy 3D render, but the game itself is resolutely 2D. These graphics aren't runof-the-mill sprites, though: developer Shiny has used superior animation honed by its artists work on Disney titles, to give life to an engaging, supremely silly character

Format: SNES/

Mega Drive

Publisher: Playmates

Developer: Shiny

Price: TBA

Size: 16 Mbits

Release: October 12

fter being lavished with kudos prior to its release, Shiny's first creation finally enters the congested 16bit arena. Boasting spectacular visuals and a myriad of playful innovations, Earthworm Jim clearly has the capacity to impress. But is there any room for another platform prima donna?

The product of Virgin coder Dave Perry and his band of Virgin defectors, collectively known as Shiny Entertainment, Earthworm Jim appears to contain all the ingredients for a superb videogame. Like Virgin's Aladdin, the most obvious focus for admiration is the

> spectacular animation: the movement of Jim and the other characters in the game is sprightly and inventive, and there are lots of genuinely funny sequences that act as a real pull in the early stages.

However, once the initial appeal of the graphics has dissolved, it quickly becomes clear that EJ himself isn't guite the character he claims



A fridge hangs by a thin wire. Whip the wire and the fridge plummets onto the branch, catapulting that poor bovine into the air

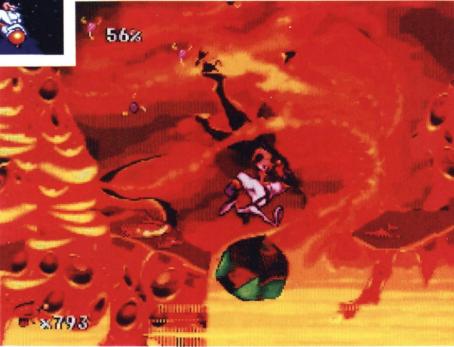
to be. Despite Shiny's attempts to enhance Jim's personality by combining his worm persona with a mechanical suit which he stumbles upon and jumps inside, there's still something missing. Basically, he lacks the



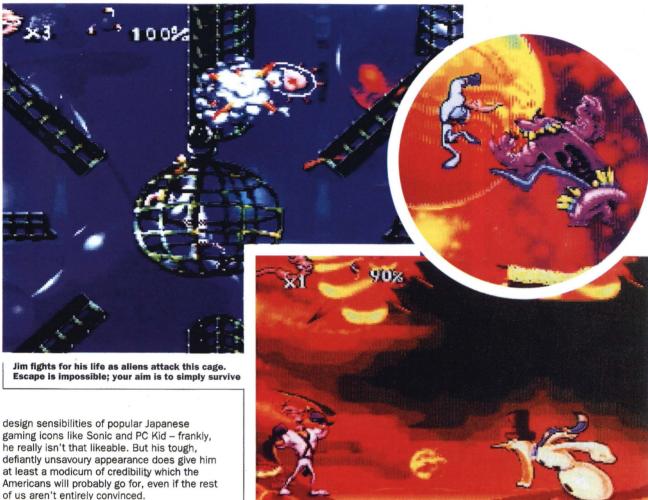




Defend yourself by whipping (above) or shooting (middle) the enemy

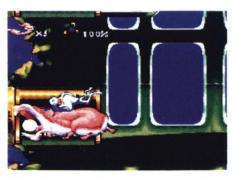


In the second level, Jim finds a huge green emerald. When he runs on this gem it carries him upwards, taking him to previously inaccessible platforms. The space-race bonus level (top left)



of us aren't entirely convinced.

Still, character flaws and all, it soon becomes obvious that Earthworm Jim is a fine, playable game. Borrowing elements from other platformers - such as multi-directional gunfire and rope swinging (with the worm as the rope, needless to say) - Shiny have made Jim an extremely versatile chap. Control is expertly handled, and it's easy to master Jim's abilities. But there's also a fair amount of frustration. Enemies cling rather too tenaciously to Jim's body, the bosses are



It's not always obvious what you have to do next in Earthworm Jim. Here, Jim has to make this hamster eat a path to the next section

unforgiving, and there are far too many leaps of faith required. These aspects probably make the game too tough, especially given the young appeal of the game's cartoon star.

This horrendous-looking creature (inset) was in fact a cute puppy a few seconds ago. The snowman boss (above) shoots fire from his mouth

42 Maintaintain and an air in the light of the contract of the

If you can handle the trickier facets of Shiny's gameplay, Earthworm Jim delivers some genuinely entertaining moments. High points include a ride on top of a huge hamster and a chance to launch a cow skywards from a seesaw, for no apparent reason other than that it's funny. At moments like this, the game fairly hops along, bursting with inventiveness. But it's the gaps that lie between them that hardened platform-game veterans may find rather dull and overfamiliar.

Technically, both the Mega Drive and SNES versions cope admirably with the paces Shiny have put them through, although Earthworm



This fiery effect, complete with three layers of parallax, is a good example of EJ's graphical finery

testscreen







Help Peter Puppy through this hazard-filled level (top). The revolting 'intestine' level (middle). Jim takes on a level boss (bottom)



On the SNES version, the background of this underwater section (above) shimmers nicely, but objects remain static. The Mega Drive equivalent is more convincing: everything sways authentically

Jim is essentially a Mega Drive game that's been optimised to work on the SNES, and Dave Perry's skilful coding means that in places the Sega machine manages to outclass the SNES. Surprisingly, the notoriously poor sound chip in Sega's 16bitter emits some remarkably clear samples, which make up for what can only be described as unmemorable background music.

But it's the structure of *EJ* that lets it down. There are no passwords or save game options, so the player is required to romp through in a single attempt. With so many levels, sub-levels, and some rather tedious 3D asteroid bonus rounds, it's questionable whether anyone would have the enthusiasm to bother. The frustration factor plays a large part in this lack of faith, but it's also worth

remembering that the school of platformers to which *EJ* belongs is thoroughly oversubscribed – cartoon characters coupled with garish backdrops are fast becoming old hat. Jim's success hangs on there being an audience that isn't already fatigued by stuff like this.

It's strange how an apparently 'surefire' hit like Earthworm Jim has ended up as just another good platformer rather than an outstanding one. Although a lot of attention has been applied to the play mechanics, there's little of real originality here. More significantly, it's not that much fun. Earthie might win fans with his particular brand of humour, but he's no platform prodigy.

Edge rating:

Seven out of ten





Earthworm Jim looks much bulkier in the SNES version (right) than in the Mega Drive game (left). Nintendo's machine also boasts more parallax (including some superb sun glare) and extra colours

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has come to pummel boredom to death with your thumbs. Choose from a rousing selection of next-gen titles as you enjoy the many high-defined yet low-priced benefits of the next generation of gaming. xbox.com







There haven't been many pairs of shorts featured within Edge's pages, and certainly only one pair hoisted as gloriously as Mike Dietz's. Here, he and his Shiny colleagues talk about graphical realism, the disadvantages of Ultra 64's tweening, and why gamers should feel betrayed by Rare's Donkey Kong Country.



An **audience** with...

Shiny Edge How did the team come together? Dave Perry We had six headhunters continually touring the world [laughs]. EMBELIA TO SHIP TO SHIP

With Shiny about to unleash Earthworm Jim, **Edge** spends some downtime on the SoCal codeshop's home turf Ithough still in his 20s,
Dave Perry, president of
Shiny Entertainment, has
had more success in the
last two years than most
programmers could hope

for in a lifetime. He's now partaking of the fruits of that success. He lives with his girlfriend in a luxury apartment a short drive from Laguna Beach, southern California, and owns a \$40,000 Mitsubishi sports car. However, prosperity hasn't diminished his drive in the slightest.

Big-selling Mega Drive hop 'n' shoot games like Global Gladiators, Cool Spot and Aladdin (that one with the help of 30 artists on loan from Disney) have established this six-foot-plus programmer as a hit machine for console games. Dave started his career at Fergus McGovern's UK base, Probe Software—a well-respected game stable—along with many of his new team. He subsequently joined Virgin, but after the completion of Aladdin, which netted him enough funds to go it alone, he left to start his own company, taking Virgin colleagues with him. And so Shiny was born.

Earthworm Jim is Shiny's first creation. Dave Perry is programming the Mega Drive version, while ex-Probe coder Nick Jones (the programmer of Alien³ on the SNES) handles the SNES game. Other former Probe talent comes in the form of art director Nick Bruty and lead artist Steve Crow. Shiny can also call on the talents of animation director Mike Dietz and animators Edward Schofield and Doug TenNapel (the designer of the Earthworm Jim character). US toy giant Playmates (of Ninja Turtles fame) are investing heavily in Earthworm Jim and a TV series is planned.

What I said to them was, 'I want the best in the world that you can find in each field', and they sent them all here. I keep saying there's no need for more people, but we keep hiring more. We're trying to get Mr Katzenberg [Disney CEO]...

Edge How successful do you think *Earthworm Jim* is going to be for you?

Dave If we can get everything to fall into

EDGE

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place the way it has to date, we will have, no matter what, a successful character. The fact is, the people we're using have the potential to take it all the way to Turtles standard. It's all down to the public now. If the public like him, we've got a huge success. If they don't, then we don't. We haven't tried to make up exactly what people want. We haven't sat there and just made him all bland. He's designed to be cool. Basically, Shiny are backing him all the way because he has all the features to make him a cool thing for 1995.

Edge What plans do you have for him?

Dave We're not just making one game and saying, that's the end of it. We're getting involved with a television series. And we're not just giving it the okay; we will be actively involved. We're actively involved in designing toys and we have other irons in the fire too. I get continuous offers to use our guys as graphics consultants for other things, for other people's projects, which means that we know about all the cool new things that are coming out. For



Shiny happy people (from top): Dave Perry, Tom Tanaka (level designer), Mike Dietz (animation director), Edward Schofield (animator), Nick Bruty (art director), Nick Jones (programmer), Steve Crow (lead artist), Doug TenNapel (animator). Plus Andy Astor (assistant programmer)

example, the *Taos* operating system – I have that here, and we have it running. **Edge** So are you hoping for a lot of overlap between formats?

Dave We're trying to create a lot of very valuable source. We've got filing cabinets weighing two tons, full of all our animations. They're protected from bombs and from fire, and no-one can steal them because they'd need a fork-lift truck to get them out. These cabinets contains all the animations, which cost quite a lot of money to develop. They're of a much higher quality than we need, so we can use them for the Saturn, PlayStation or Ultra 64.

Edge What do you think is the key to great animation?

Dave Most people would look at most of the stuff we get sent in by freelancers and say it's brilliant. But when you really look at it, it often lacks that sense of realism, which is the main thing animators should be trying to achieve. Scissors are heavy, so you want to see heavy scissors walking across the table when someone animates them. The table bending under their weight - that kind of thing. Animotion is the process we use to get paper onto computer. Everyone had a go when it was new. We had terrible results at first, then okay results, and then final results that we thought were great. The thing is, with Aladdin it still took 30 Disney people to colour everything we got, but we've set it up differently here to do away with most of those people. We didn't know if this was going to

work at first.

Edge How long
will you continue
using animation
techniques
like this?

Dave Until they stop using pixelbased computers! The trick we use, and it's no real secret, is that we

move things by less than a pixel. It may sound impossible when using a computer, but using anti-aliasing you can get that subtlety. These guys here are able to achieve movement so smooth it's just ridiculous. And it's this subtlety that gives Jim his character. There are no lines on his body. As his body twists, even if his knee wouldn't have moved a pixel, you'd still see it move half a pixel.

Edge What about polygon animation?

Dave I don't see the need for it at the moment except for specific tasks when you need polygons for certain situations. At the moment there's this trend to do things like



Shiny's Dave Perry is confident that Earthworm Jim will be genuinely different

Alone In The Dark and Out Of This World. They use polygons because it's the cheapest way to store their style of graphics, whereas we're storing our graphics in the same form of memory but using compression techniques to give fully shaded 3D characters. It's a personal choice, but even if their compression was better I'd still choose pre-rendered characters over characters constructed out of four squares.

Edge What about inbetweening, the technique Nintendo are pushing with Ultra 64? Is that ever going to take over as the standard form of animation?

Mike Dietz The problem is that the

'We use 3D as

a tool. We don't

just use it as a

gimmick. Our game has

both digitised effects

and rendered stuff'

computer will always take the most logical choice, which is rarely the best choice. If there was software good enough to inbetween key frames of animation properly, then it figures that Disney would already be using it.

Doug TenNapel And they're not. If it was smart enough to inbetween, you wouldn't need the animator at all. It's absolutely impossible – it's simply not going to happen.

Nick Bruty After you've edited all the possible variables, it would be quicker just to animate it. Doug could flash out 10 feet of animation in the time it would take to build the 3D model of the head of one of the characters

Dave We're not giving up, though. We're trying to form a partnership with Softlmage to do specialised tools for Shiny. If we can get a relationship going with them, then we

interview

can advertise them while they help us. People will generally do anything to make their lives easier.

Edge What do you think of Nintendo's Alias-rendered animation?

Dave If you look at Donkey Kong Country, you wonder just how much Nintendo actually had to do with it. There is still no sense of humour and I don't think it will entertain young children like Aladdin did. Doug I think the public should feel betrayed by Donkey Kong Country (laughs). They've turned him into Mario! I'm disappointed with the gameplay, but I think it will probably put Nintendo back on the map because it looks beautiful. They have a cool 3D tool but they're not really doing anything special. We use 3D as a tool. We don't just use it as a gimmick. I think a good example is that our game has both digitised effects and rendered stuff, and we can increase or decrease any percentage of either at any time.

Edge Are there noticeable differences between the SNES and Mega Drive versions of *Earthworm Jim*?

Nick Jones There are obvious colour differences and there are some special effects in the SNES version that the Genesis hardware just can't handle – things





Dave Perry (top): 'These guys achieve movement so smooth it's ridiculous. It's this subtlety that gives Jim his character'



Earthworm Jim boasts spectacular scrolling effects and some great gameplay (Mega Drive shot)

like the glare from the sun's rays when it appears from behind a cloud. We're really happy with things like that.

Dave We've got a system that can develop simultaneously on both systems and a programmer who can fix bugs in a minute on both. It's close to how *Taos* works – it's not binary-compatible but it's codecompatible. We can work on separate levels and update them simultaneously.

Edge When will the game be finished?

Dave We've got about 15 days until submission. We're working 12 hours a day minimum – if we're not sleeping we're here. You guys are the last people to come through that door. We're trying to get it out before Donkey Kong Country or Sonic 4.

Edge What's your favourite game?

Dave *Doom* on network. I had to write a program to check if there were copies on the network. I came in in the morning and everything would be quiet – they would already be playing it. I have to

actually hide the good games in a cupboard now.

Edge Are you

Edge Are you looking forward to the new console formats?

Dave On the release of each one there'll be ten fighting games, ten flight sims, ten of everything... Every

genre has been done to death and so we have a new genre planned that has not been done before. We can start getting actual character across with these new machines.

Edge Sega seem to be losing adherents...

Mike That's because there's an illusion that Daytona and Saturn are the same thing.

When gamesplayers find out they're not, I think they'll be massively disappointed.

Expectations are still too high.



Doug We still prefer Sega's games to anyone else's, though.

Edge What, in preference to Nintendo's?

Mike Oh yeah, *Virtua Racing*, *Virtua Fighter*. Nintendo just can't do this stuff.

Edge What about Sony's plans?

Dave We wish we knew what they were. They have the best hardware – it's the best we've ever seen. They're still keeping things very quiet in the States, though.

Edge Are you going to continue with character-based games?

Dave We've only specialised in them in the last couple of years anyway. The fact that computers are becoming more

Every genre

to death. We

has been done

have a new genre

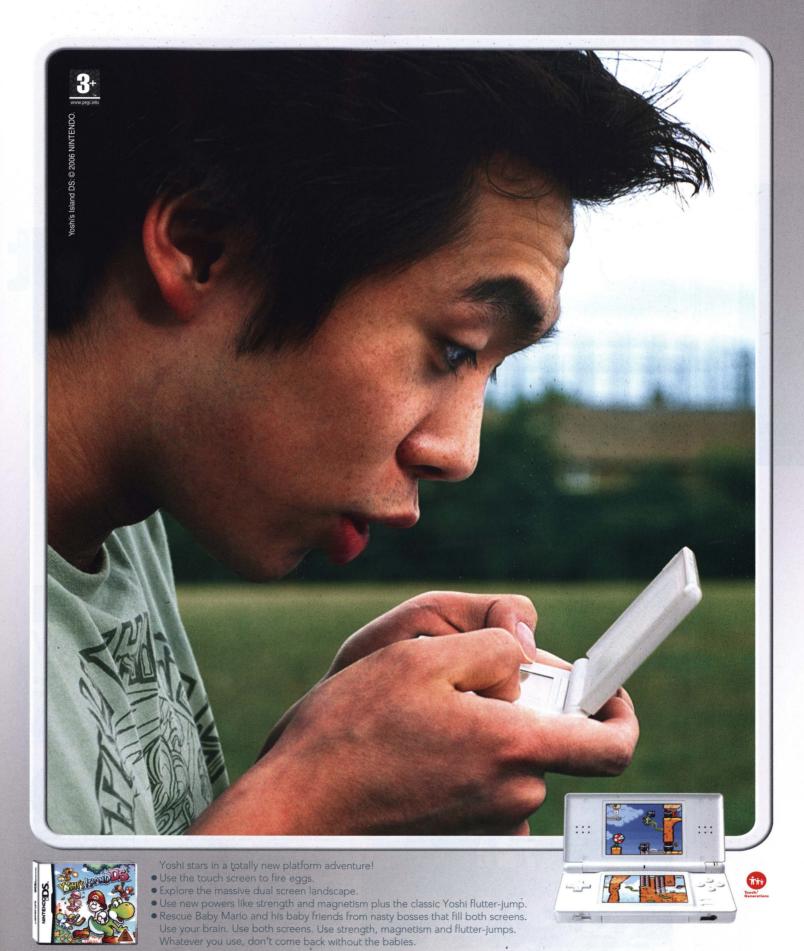
been done before'

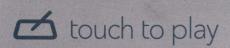
planned that has not

powerful will inevitably mean that characters come more to the fore. The games we have planned are not just platform games. We're not just going into rendered worlds either – we're not going to render

everything. We have ideas and test stuff that will create a new genre of game, a new style of game that will hopefully cause a lot of that style to be done by other people as well. And while giving you full control of the game the whole time. We're called Shiny Entertainment, not Shiny Interactive or anything. We want to make games you can control like any other. Don't worry, we have some stuff that Edge will love [laughs].

32





In spite of new hardware looming from Sega, Sony and Nintendo, SNK isn't about to roll over -

and why should it

when it has such a

Perhaps the addition

of a CD-ROM drive is

all that's needed to

make the Neo-Geo

amenable to the

average gamer

potent piece of

hardware itself?

Neo-Geo CD hits the street SNK's Neo-Geo console joins the ranks of the CD

generation

it is...

Seymour Cray. In 1976, working alone and designing solely on paper, he produced the 100MFLOPS Cray-1, the spiritual father of all today's supercomputers. Cray machines are still the ultimate in computing power

n the midst of the excitement surrounding the launch of the PlayStation and Saturn, SNK have rolled out their

Neo-Geo CD system in Japan at a price of ¥49,800 (£320).

The launch was initiated by a six-stop tour of Japan's major towns designed to claw back some publicity from Sony and Sega. The 'Neo-Geo CD Live Tour', which kicked off in Hokkaido and travelled through Osaka and Nagoya before its grand finale in Tokyo, was the gamesplaying public's first opportunity to get their hands on the new machine since SNK announced its launch at the









The 'Neo-Geo CD Live Tour' stopped off in various cities across Japan and featured the usual mixture of promotion and onstage competitions

Tokyo Toy Show in June. The unit itself and its initial range of CD software were the main attractions, but SNK also laid on fighting tournaments organised by helpers dressed as wellknown SNK videogame stars.

The Neo-Geo CD is currently a front-loading system which is being pushed by SNK as a limited edition model - only 30,000 units have been manufactured. To ensure that support for the new format continues, SNK have announced that they are manufacturing a more affordable top-loading machine which is expected to arrive around December this year.

SNK obviously feel that their ageing system still has what it takes to be a viable contender in the videogame arena: apart from the addition of seven megabytes (56 Mbits) of DRAM and re-iigged VRAM and SRAM, the Neo-Geo CD has the same internals as the original cartridge unit.

The quality of most Neo-Geo software has never really been in question, but the ridiculous price tags carried by some of the games -Viewpoint costs £220, for example -





The Neo-Geo CD comes with two joypads (top). A new-style joystick (above) is also available, as is an RGB SCART lead

EDGE

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oading times for the new system are noticeable (top). Another line-up of beat 'em ups: Shin Samurai Spirits, aka Samurai Shodown 2 (top right), The King Of Fighters '94 (far right) and Gangan (inset right)



the Neo-Geo CD, especially as

SNK are not releasing a CD-ROM addon for the existing cartridge machine (because of internal VRAM problems).

However, SNK stress that they will continue to support the cartridge format. Games will always appear on cartridge first, with the CD versions following between one and two months later.

It's thought that SNK are planning to release a UK version of the Neo-Geo CD sometime next year.







Neo-Geo CD games (top) will include Nam 75 (centre) and ADK's Magician Lord (above)

Late '94

Raguy

cyberspace

cyberspace: the virtual space of computer memory, networks and telecommunications cvberspace: the

consensual hallucination experienced daily by millions of users

cyberspace: a graphic representation of data abstracted from the banks of computers cyberspace: bollocks more like we all know it's a made-up word so sad people can say they were 'in cyberspace all day' instead of being in their bedrooms all day being driven insane by those irritating modem noises trying to find dirty

pictures to download

→ was a good enough reason for most gamers to give it a miss. With some cartridges boasting huge memory usage - Art Of Fighting 2 claimed 178 Mbits

- the cost of cartridges was always destined to be high. But even the biggest Neo-Geo games will fit snugly onto a CD, and they won't have the same impact on your bank balance. either: CD

conversions of older Neo-Geo games will clock in at an exceptionally affordable ¥4,800 (about £30), with the most expensive (and more recent) CD games costing up to ¥8,800 (£56). And with thirdparty developers ADK and Sammy onboard, the Neo-Geo CD can immediately boast a huge range of affordable arcade-quality titles.

In some cases, SNK are re-recording and enhancing soundtracks from existing Neo-Geo games to suit the CD format - although the exceptional quality of the music in some cartridge titles (Last Resort is a prime example) means that in most cases there will no noticeable change.

Owners of the existing Neo-Geo system are naturally concerned about

Available now

Priced at ¥4,800

SNK will continue to

format. Games will

always appear on

cartridge first

support the cartridge

- Nam '75
- · League Bowling
- Puzzled
- · ASO II
- Top Players Golf · Joy Joy Kid
- · Super Spy
- Burning Fight
- Priced at ¥5,800 Football Frenzy
- Fatal Fury
- · Last Resort

- Baseball Stars 2* King Of The
- Monsters 2
- Priced at ¥6,800.
- · Art Of Fighting
- Fatal Fury 2
- Priced at ¥7.800.
- Samurai Spirits* • Fatal Fury Special*
- Art Of Fighting 2*
- Super Sidekicks 2 • Top Hunter
- Aero Fighters 2

Available '94

October

- · Roho Army
- November
- Baseball Stars
- Gan Gan

- December
- Samurai Spirits 2
- Ninja Combat • Thrash Rally Crossed Swords

• Magician Lord

- · Ghost Pilots
- Ninja Commando Mutation Nation
- The King Of
- Fighters '94
- * Re-recorded soundtracks
- 44,800 = £30, 45,800 = £37,
- \$46,800 = £44, \$7,800 = £50

The 16bit generation has already given us Aero (an acrobatic bat), Bubsy (a bobcat) and Zool (a ninja ant) as game stars, so it shouldn't be much

of a surprise to see a lizard turned into

a platforming hero. And yet, somehow, it still is. Probably not

even Dana Gould's

'twisted' humour can propel Gex into Mario's league.

Gex

32bit platformers are a rare breed. 32bit platformers starring reptiles are even rarer. **Edge** samples a 3DO

> game that is definitely one of a kind





The TV shows that have had such disastrous consequences for Gex make fleeting appearances throughout the game. As Gex faces up to an enemy, (above), an inverted Enterprise trundles across the top of the screen

Format: 3D0

Publisher: Crystal

Dynamics

Developer: In-house

Release date: November '94

Size: 1 CD

Origin: US

C

rystal Dynamics have already gained a reputation as the 3D0's most loyal champions. *Gex* sees them heading into

uncharted territory with an effort to produce the first 3DO platformer.

Crystal Dynamics have followed accepted videogames wisdom by making Gex's central character an animal. Slightly less conventional is the fact that they've chosen as their eponymous hero a hyperactive gecko lizard with a twisted sense of humour and the voice of Dana Gould, presenter of a tacky American TV show.

According to the plot, Gex has been sucked into the Media Dimension, a place dominated by kitsch culture – '50s B-movies, lunchtime game shows, etc. His object is to destroy all the television sets in this lurid limbo and then defeat arch-enemy Rez Zul.

All Gex's movements – consisting of over 450 frames of animation – were created on SGI gear using a



With hundreds of frames of animation, Gex is a highly versatile creature

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Gex's tail flick attack is hard to execute but very satisfying when it succeeds (top). Gex evades a zombie by scaling a wall (above)



The bosses in *Gex* are both imaginative and superbly detailed (top). Gex has swallowed a bluebottle power-up (above)

process similar to that employed by Rare for *Donkey Kong Country*. What distinguishes Gex from most other platform characters, though, is that he doesn't suffer from gravitational limitations: his sucker feet enable him to shin up walls and cling to ceilings,



Glorious 32bit visuals like these are no guarantee that Gex will cut any ice this Christmas with punters eagerly awaiting the release of 16bit games Sonic 4 and Donkey Kong Country

which means he can circumvent obstacles that Sonic or Mario would find impassable.

Gex has other lizard-like resources: when confronted by an enemy he can use his thrashing tail as a weapon or lash out with his darting tongue. Power-ups are also available: bluebottles and dragonflies take the place of the more usual rings and coins and allow Gex to fly or throw fireballs.

18 months after launch, the 3D0 has a representative from almost every videogame genre, with the most obvious absence being a killer platformer. Although *Gex*, with its unorthodox main character and obscure cultural references, isn't exactly standard platform fare, it could prove to be the format's equivalent of *Mario*.

prescreen

Tama

Frank

While Sega wrestles with its 32bit hardware in an effort to get it running a halfway convincing rendition of itsing processing-intensive coin-op beat 'em up Virtua Figher, Tengen goes to work to bring to the Saturn launch line-up... a game about rolling a ball around in a box. Set in a place called Balls World. Really.

Format: Sega Saturn

Publisher: Tengen

Developer: In-house

Release date: Nov (Japan)

Size: 1 CD

Origin: Japan

ama is the Japanese word for ball, and in a sense developers
Tengen have come full circle with their forthcoming Sega

Saturn game, set to be one of the first thirdparty releases for the machine. Tengen were established to publish home computer conversions of Atari Games' coin-ops, and it was Atari who first proved that there was gameplay in balls with their innovative arcade machine, *Marble Madness*.

Released in 1985, Marble Madness took as its foundation a realistic simulation of ball dynamics and added some colourful isometric graphics and a trackball to create one of

videogames' genuine originals. A trickle of

Tama is the game that completes the Saturn launch line-up. **Edge** witnesses the resurrection of a classic genre

copycat titles followed on the home computers of the day – notably *Gyroscope, Spindizzy* and *Bobby Bearing* – but by the late 1980s the genre was all but dead. Only Asciiware's *Spindizzy Worlds* and Taito's *Cameltry,* both for the Super Famicom, showed that the 'roll 'em up' still had some life in it.

Bearing more $_{\rm than\; a}$

passing resemblance to one of the challenges in Channel 4's The Crystal Maze, the gameplay in *Tama* reverses the concept of *Marble Madness*. Instead of controlling the ball, you control the course, which you can tilt, twist and rotate in order to make the ball move in the required direction. The object is to steer the ball into a goal before a time limit runs out.

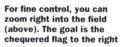
Each course, or 'field', in *Tama* features



Zooming out fully reveals the nice mirrored backgrounds upon which all the fields lie (above)



On this field, the goal is much higher than on the field you start the game on. You have to cross the block-strewn landscape, make it up the ramp, then get around to the right



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Getting up the ramp at the centre of this level will take some doing (above). Being able to zoom in for a closer view is a crucial part of the game (above right)

a maze consisting of walls, ramps, steps plus one or more unusual obstacles and traps.

There are no enemies, so the game is a simple race against time, but, amazingly, the pared down gameplay is accompanied by a storyline: bad balls, created by an evil machine, have taken control of Balls World, and the good balls have to try and win it back. This is resoundingly silly by any standards, even those of the Japanese, but it does allow an excuse for setting the fields in different locations, including forests, mountains, plains, glaciers, athletics tracks and even a

On the spooky cemetery levels, the walls and obstacles are made out of gravestones and obelisks

cemetery. As might by expected, each type of field has its own peculiar type of terrain which affects the balls' movement in different ways and gives the action some variety.

Despite its impressive

texture-mapped geometry, *Tama* is unlikely to feature highly in Sega's software push for the Saturn. As long as it delivers everything it promises, the Japanese penchant for puzzle-oriented arcade games should secure it a niche in the market, but with *Clockwork Knight* and *Virtua Fighter* also scheduled for the first week of launch, it could find itself well back into the shadows.



The glacier levels are, unsurprisingly, constructed out of of blocks of ice, which makes controlling the ball's movements particularly tricky

Virtua Fighter

And and frontieres:

How important will it be for Sega to leverage its coin-op heritage on the forthcoming Saturn? The amount of effort going into its Virtua Fighter conversion seems to suggest that it will be a key concern in order to make the console the preferred option for the arcade-goer. It's all about the magic 2,000 polys mark...



The higher resolution of this 45%-complete version (above) makes it notably more impressive than the low-res, low-polygon demo Sega exhibited at the Tokyo Toy Show (right)

Sega's polygon beat 'em up is starting to take shape on the Saturn. **Edge** gets technical with developers AM2

Format: Saturn
Publisher: Sega
Developer: AM2
Release date: November
Size: 1 CD
Origin: Japan

have to bear all the processing burden. Sega's legendary coin-op designer, Yu Suzuki, who is heading the AM2 effort, is currently working on an acceleration program to bypass this bottleneck. He explains: 'In order to get over the problem of the hardware difference [between Saturn and the Model 1 board] we're preparing a high-speed program and improving the display capability. When you try to program a character with an increased number of polygons, processing which took 1/30th of a second can end up taking 1/15th of a second. The more processes there are, the slower it gets. We have to write a program which can

f there's one game that oozes over-the-shoulder appeal, it's the arcade version of Virtua Fighter. To date, there's never

been a more visually exciting beat 'em up, and Sega's main arcade division, AM2, have spent the best part of four-and-a-half months trying to ween all the moves, graphics and playability of the Model 1 arcade game onto Sega's upcoming 32bit Saturn machine.

At the 10%-complete stage, Saturn Virtua Fighter naturally looked crude and blocky. But as the characters in the game were composed of only 100 polygons compared to the arcade's 2,000, this was no real surprise. Now, however, things look very different. The polygon count is slowly creeping up and the solid yet slick look of the arcade version is gradually beginning to surface.

But it's not just a simple case of getting a graphic artist to model graphics with an increased number of polygons. Unlike the Model 1 board, the Saturn has no custom polygon hardware, so the machine's twin CPUs

The quality of the Saturn

greater number of polygons.

graphics in the 45%-complete version has been greatly improved by the

run in 1/30th of a second even with a

recent switch to a higher resolution (640X224 from 320X224). This makes a total of 143,360 pixels, which brings the game closer to the resolution of the coin-op – 190,464 pixels at 496x384.

Despite the fact that the finished Saturn game will

probably feature fewer polygons than the coin-op, it's likely that *Virtua* Fighter devotees will find it hard to



Wolf is made up of 550 polygons, while the arena uses 220. Texture mapping will reduce this count



Wolf grapples the usually nimble Kage to the floor. All 700 arcade moves will be included on the Saturn

It's possible for the Saturn version to achieve the same effect with 1,000 polygons that the arcade version needs 1,500 to create

tell the difference between the arcade original and the home version. This is only possible because of the Saturn's texture-mapping abilities. Put simply, Sega's Model 1 arcade board was nothing but a polygon generator. All the floors and characters in the game were constructed from polygons (although the backdrops were bitmaps), and minor details like facial expressions and the belts and hats of some of the characters were created by adding extra polygons.

The Saturn version, however, will be using texture mapping to provide such detail: the polygons that were used for the eyes, ears and mouth, for example, will be replaced with textures. So, in theory, the Saturn version could be just as convincing as its arcade counterpart even though it uses relatively few polygons.

In fact, Suzuki claims that it's possible for the Saturn version to achieve the same effect with 1,000 polygons that the arcade version needs 1,500 to create. One AM2 programmer even went so far as to suggest that 'if 1,200 polygons are



The arcade version uses between 1,500 and 2,500 polygons per fighter

used for each character, the Saturn version will look more or less on a par with the arcade game.'

Suzuki's original task was to get 1,000 polygons running in the Saturn version. This objective was reached by the time the Tokyo Toy Show took place in June this year (although Sega admit that the demo seen by **Edge** at the show was the result of two weeks of rush work). Now, with the Saturn version making use of about 1,300 polygons in each scene (550 per character and 220 for the ground), Suzuki is hinting that it might eventually be possible for the Saturn characters to reach the magic 2,000 polygon mark.

Virtua Fighter will be hitting
Japanese shelves to coincide with the
launch of the Saturn in late November.
Count on Edge to be first in line
for coverage.

Processing

Although widely acclaimed for its graphical appeal, there's more to *Virtua*Fighter than meets the eye.

The fluid camera movements and jaw-dropping animation are created by means of high-speed processing. All the processing needed for each frame of Virtua Fighter – from the actual calculations to the point at which things happen on-screen – is completed in 1/30th of a second – 0.033 seconds or 33 milliseconds and then looped.

The 'high-speed program' mentioned by Yu Suzuki (see left) is primarily concerned with minimising the time that the CPU waits for the next process during the program looping. 'We are working at a level where if we save one millisecond we can display 100 more polygons,' says Suzuki.

For the Saturn version to accurately replicate the movement of the arcade, the machine must carry out I million operations every 1/30th of a second. For the record, one processing step on the Saturn takes 35 nanoseconds, or 35 thousand-millionths of a second.



Saturn Virtua Fighter uses texture mapping to replicate some of the character detail that was achieved by polygons in the Model 1 coin-op. Even at this stage it looks good





A trip to Skywalker Ranch to see what a company founded way back in 1982 has in store for PC gamers in the mid-'90s. Key revelations involve the superiority of LucasArts' tech over id's graphics code, a belief in Sega's strengths, and the news that Full Throttle will not actually be packaged with a pair of leather trousers.

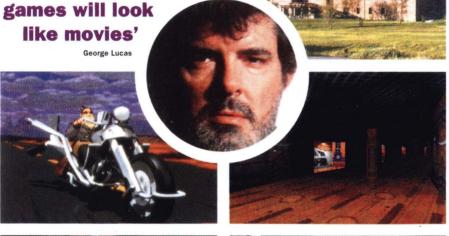
'Movies and videogames will always co-exist. **People will always** want to have a story told to them and they will also like to play games where you have some control over the outcome. There will be movies and there will be

games, and the

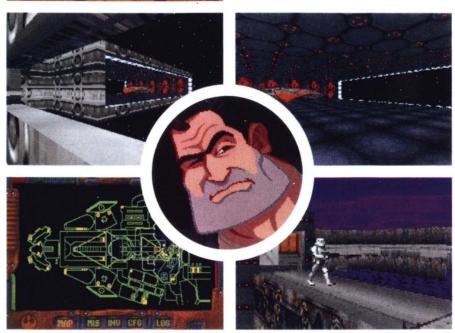














LucasArts

With three releases in the offing, LucasArts are gearing up for a major assault on the games market. **Edge** visits the US for the latest intelligence from the Lucas camp





nyone requiring proof of the symbiotic relationship between films and videogames

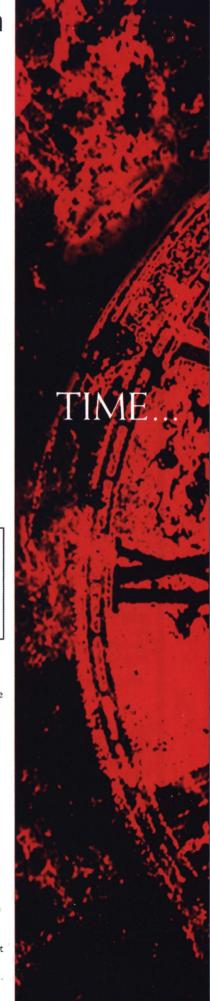
need look no further than George Lucas. A filmmaker by trade, Lucas recognised the creative potential of videogames – and the essential similarities between the two disciplines – when the games industry was still in its infancy. The result was the growth of an entertainment empire that has become a superpower in both spheres.

Lucas' career was launched into orbit in 1977 with the megabuck-grossing sci-fi spectacular Star Wars. The film, which spawned two equally successful sequels, not only made

Lucas' name but established Industrial Light And Magic, the company he set up to provide the visual effects for the movie, as undisputed leaders in their field. Realising that the combination of creativity and technology that ILM specialised in was also what videogames depended on, Lucas went interactive in 1982.

The first products from Lucas' new games division, Lucasfilm Games, were Ballblazer and the revolutionary fractalbased Rescue On Fractalus and Koronis Rift, for the Atari 800 and later the C64. They were followed by games like Maniac Mansion and Monkey Island, which confirmed Lucasfilms as a major force in the videogames market.

The early 1990s saw the first titles released under the



prescreen



LucasArts label.
Focusing primarily on the PC, LucasArts have been resposible for a string of hits,

including Day Of The Tentacle, Sam And Max Hit The Road and X-Wing, all of which remain among the most highly regarded games ever released for the system.

Since 1978, the

Lucas empire has been based in rural Marin County, a few miles north of San Francisco. After the completion of Star Wars, Lucas bought 5,000 acres of rolling farmland in the area, named it Skywalker Ranch, and transplanted ILM lock, stock and barrel from their original location in the northern Los Angeles suburb of Van Nuys.

The creative community of Skywalker Ranch value their privacy, so it was a rare privilege

'Sony have a history of

experimenting with their

products in the market. Is

the PlayStation an experiment or

is it a truly dedicated entry

into the games environment?'

Randy Komisar, president, LucasArts

for journalists to be admitted. Unfortunately, George Lucas himself was keeping a low profile, and Darth Vader and R2-D2 were nowhere to be seen, but **Edge** did get to meet the LucasArts team and ask them about their current projects as well as their plans for the future.

For the last couple of years, LucasArts have been working on three major new products: *Dark* Forces, Full Throttle, and The Dig.



The most promising title in LucasArts' winter release schedule is *Dark Forces*, their very own *Doom*-style arcade adventure. You play a Rebel spy whose mission is to infiltrate a Star Destroyer and steal the Death Star blueprints

Dark Forces has got PC owners salivating because it looks nicer and is reputed to play better than Doom. Containing a scenario contemporaneous with the Star Wars story, it's a firstperson arcade shoot 'em up set in a fully texture-mapped environment. The similarities with Doom are unavoidable, but lead programmer Darren Stinnett denies any plagiarism. 'We didn't know about Doom when we started coding this game,' he asserts, 'but when it did come out it made us set our sights a bit higher.

Dark Forces includes subtleties lacking in Doom, such as a plot. You play an agent working for the Rebel Alliance whose mission is to secure the plans for the Death Star and investigate a new breed of soldier called the Dark

Trooper. 'We wanted to have a purpose to our game, so that it wasn't just gunplay all the time,' says Darren. 'Dark Forces actually started out as a Luke Skywalker game - it was even called ledi originally. But as we tried to mould the Star Wars story into a game, we found that we were limited by what was already there. So we decided to branch off in a new direction. We wanted people to really believe that they were on a Star Destroyer, so there's all sorts of background stuff that goes on, such as people being paged and TIE fighters taking off.'

The team were motivated by a desire to produce a game that was more strategic than the traditional shoot 'em up. 'We constructed it so that we don't just throw more and more at



players - they have to actually learn how to beat the monsters,' says Darren. Over 20 different enemies (from probe droids to garbage compactors) are featured in the game, as well as nine different weapons, many of which are dual-purpose.

According to LucasArts, id Software, the creators of Doom, tried out Dark Forces at the CES and were very impressed. 'We've loaded up Doom's graphics on our engine and we've found that, in most areas, ours is faster,' claims Darren, 'On a 66MHz 486 PC the engine runs at 25 and 30 frames per second."

Darren is also keen to emphasise how big Dark Forces is. He reckons that it would take you about 40 hours to complete. even if you had some idea of what your goal was (although there is a map to prevent players getting irretrievably lost). 'The thing is that this is the Star Wars universe and people will want to wander around,' explains Darren. 'The level designers are actually architects and they've constructed environments that make a lot of sense. They don't just randomly throw stuff at you. They've used the actual blueprints from Star Wars and so they've faithfully recreated ships and locations from the film."

Full Throttle is the

latest in a long line of groundbreaking graphic **Clockwise from** top: Randy Komisar, president; Justin Chin, **DF** lead artist; Winston Wolf, DF programmer; Ray Gresko,

adventures from the Lucas stable which started with Maniac Mansion and includes The Secret Of Monkey Island, Day Of The Road. Many of the programmers and animators who contributed to Day Of The Tentacle are now among the 20 people working on

DF 3D programmer; Darren Stinnett, DF project leader); Ed

Kilham, Larry Holland (middle),

designers, X-Wing/TIE Fighter)

Tentacle and Sam And Max Hit The



The Dark Forces team have been working on the game for over a year. They reckon that their engine is quicker, better and prettier than id Software's

Full Throttle. The team includes background artists, 2D artists, 3D artists, chief technologists, programmers and probably a ground support crew of caterers and gaffers. Project leader Tim Schafer believes that teams of this size will become standard; the game production process is maturing, and the days are gone when you could get away with just one person producing the code, graphics and sound.

The Full Throttle gameworld is an apocalyptic place. You play the role of a biker who has got himself into a spot of trouble with the law. The plot revolves around avoiding the police and doing battle with sundry bad guys who don't like the cut of your leather jacket.

'You couldn't do a game about a biker and have him go to libraries,' laughs lead artist Peter Chan. 'He had to get on a motorbike and punch people.' Peter maintains that Full Throttle isn't intended to be a beat 'em up, though: 'It still has the same puzzlesolving structure as all our other adventure games.'

Full Throttle won't include as much humour as Day Of The Tentacle. 'It's not a gag-oriented adventure at all,' says Tim, 'but



prescreen





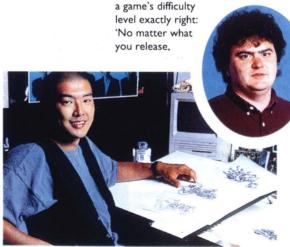
Full Throttle, LucasArts' latest graphic adventure, uses both 2D and 3D graphics in conjunction with hand-drawn animated backgrounds



it's funny because it takes itself so seriously.' Peter concurs: 'It's like an action movie with

comedic lines like "make my day". There's a lot of comedy in something like that.'

Full Throttle is likely to provide more of a challenge than Tentacle, which attracted criticism for being too easy. 'When we originally tested Day Of the Tentacle it was way too hard, so there were some things we streamlined a little bit,' recalls Tim. But he feels that it is almost impossible to get



All of Full Throttle's graphics were originally hand-drawn by lead artist Peter Chan (above). Full Throttle project leader Tim Schafer (inset)

some people will sit down and just plough through it, just so they can brag about it on the Net.'

The Full Throttle team have become accustomed to the benefits of CD-ROM and most would now be reluctant to return to floppy-based games. 'It's sort of like an addiction,' says Tim. 'I don't know if I could bring myself to

make a game for floppy now.
You get used to the digital sound and the streaming fullscreen animation. I can't imagine returning to the days when we had to ask the animators to make just one of a character's fingers move.

LucasArts' third

major game, *The Dig*, has attracted a lot of attention recently due to the much-trumpeted involvement of George Lucas' fellow movie wunderkind Steven Spielberg. This came about, explains LucasArts president **Randy Komisar**, because 'Spielberg is a gamer. And he came to us with a game idea

that he had put together in the process of putting together an episode of Amazing Stories. In reality, it's not a property that was developed in a TV or film environment. It's a property that is original to the gaming environment.'

Full Throttle is set in a futuristic world, not unlike the one Mad Max inhabits.

You play an outlaw biker on a mission to steer clear of the law. The game will be released in late '94 on CD-ROM only (leather trousers not included)

Unfortunately, LucasArts are keeping *The Dig* under wraps at the moment, so gamers will have to wait to see what these two giants of the entertainment industry produce.

Surprisingly, given LucasArts' background, Komisar feels that the traditional movie licence is a dead end. 'I think that we've got a completely different medium here. We've got an opportunity to create products which rival, if not exceed, what we can get from Hollywood,' he says. 'The reason that we work within the Star Wars universe isn't because we get to take advantage of the Star Wars films, but because it's such a rich environment.'

Komisar is also sceptical about the importance of

54

'Nintendo have got \$3 billion sitting

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considerable amount of money to

pump into marketing the Ultra 64. The

question is, can they bring SGI down

to consumer price and accessibility?'

Randy Komisar, president, LucasArts

interactive television, at least in the short term. 'There are certainly opportunities in the future and LucasArts will have a role there, but people's expectations about what





interactive TV will deliver are grossly exaggerated. It's going to be much further off than we expected and it's going to be of a much lower quality than we assume. I do believe that eventually the right infrastructure will be in place, but I'm not sure what the content will look like.'

But he believes that new developments, like interactive television, are destined to have a profound effect on the nature of videogames. 'You're going to get really interactive environments. When you begin to look at network environments, whether online or through the TV, there's going to be an opportunity to interact with other people. You will have a whole range of experiences, whether it be playing flight sims with each other or actually being characters in a



Steven Spielberg co-wrote the storyline for *The Dig*, a point-and-click adventure in which you play an astronaut who gets sucked into another dimension and has to solve its mysteries before he can go home

story. I really see these games becoming environments.'

Komisar is looking forward to the new 32bit and 64bit formats because they will enable the company to use realtime graphics generation to create a new type of interactive experience. Like everyone else, he can only speculate about which of the next-generation machines will become dominant, but he expresses doubts about how the newcomers to the hardware field will perform.

'Sony come from a heritage of consumer electronics and they are very powerful. The question is, can they really play in this marketplace? How committed are they? They have a history of experimenting with their products in the marketplace. Is the PlayStation an experiment or a truly dedicated entry into the games environment?

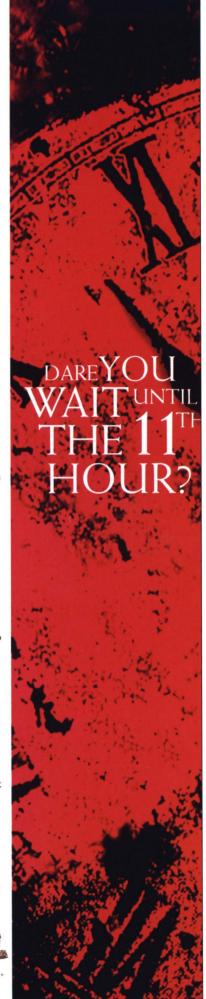
'3DO had a head start which was squandered. When can their new technology come out? Will they lose all their current developers before they get a chance to really compete?'

Komisar is more optimistic about the chances of the established hardware manufacturers: 'Nintendo have got \$3 billion cash sitting in the bank, so they've got a considerable amount of money to pump into marketing the Ultra 64. The question is, can they bring SGI down to consumer price and accessibility?

'Sega are a very strong company. There appears to be some confusion between Saturn and 32X, but that's something they can probably sort out. Sega are an important player.'

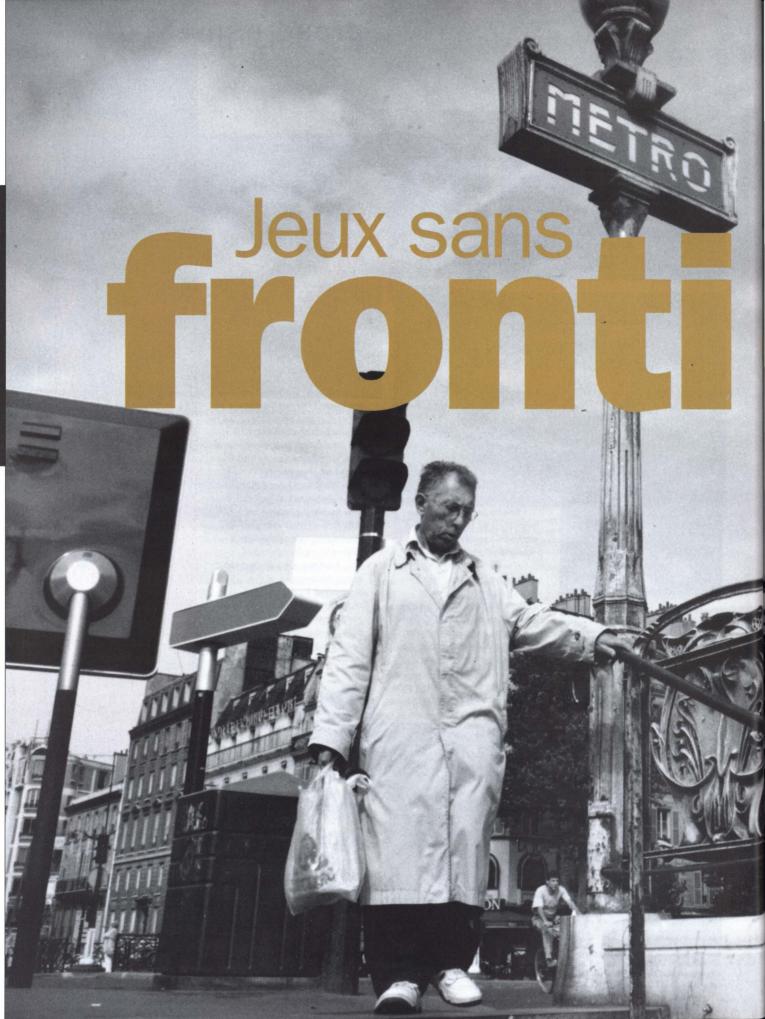
Atari, on the other hand, get short shrift: 'Are they for real?'

For the time being, Komisar is happy to continue to focus on PC CD-ROM: 'Hopefully, it will see us through the chaos of the next few years.' Whatever formats they find themselves working on, LucasArts' success is likely to continue. They company are committed to new forms of gameplay, and they're not exactly short of creative and technical talent.

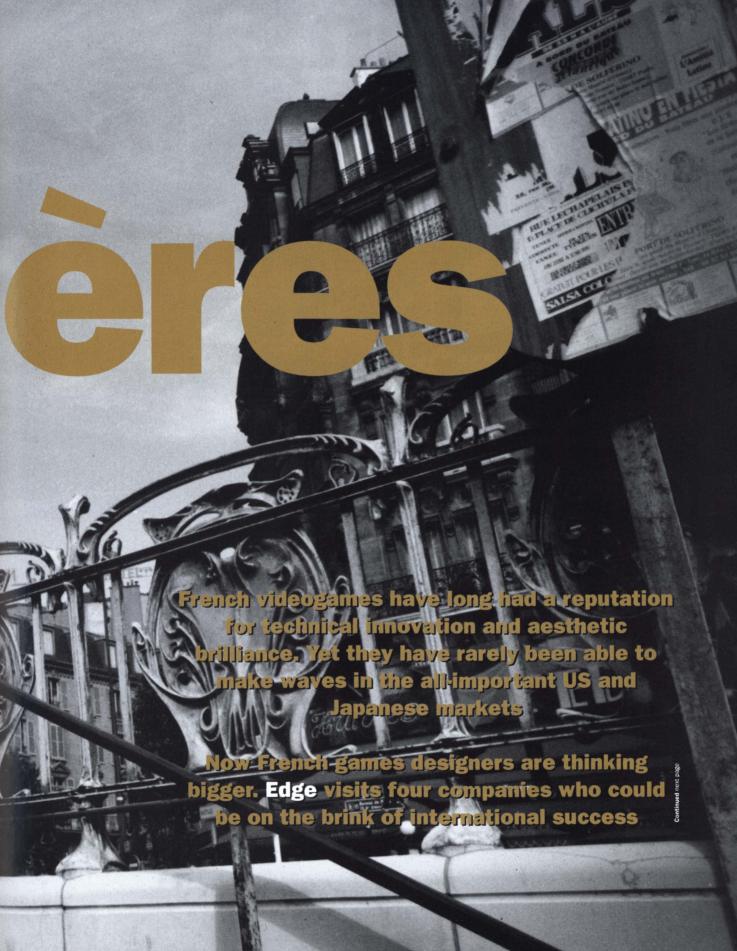




A Gallic extravaganza kicks off with a visit to the immodestly named Amazing Studio, home to the talents behind 16bit classics Another World and Flashback, before taking in Cryo (currently working on Commander Blood), Little Big Adventure's Adeline, and Infogrames, which is putting together Alone In The Dark 3.







Amazing The creators of Flashback and Another World are preparing to go global



EDGE

1994

French developers

he accepted wisdom in the videogames industry is that French games don't travel. Although French creativity is universally acknowledged, strange scenarios, unusual graphics techniques and generally odd concepts have done little to convince marketing departments outside Europe that France has something viable to offer. In short, French games have often been too clever

for their own good. Eric Chahi. co-founder with Frédéric Savoir of Paris-based Amazing Studio, believes that this is due to the peculiar nature of the French games industry. 'In France there is more interest in the

individual artists and authors,' he suggests. 'I think games tend to be more imaginative because artists and programmers aren't answering to a marketing department who are targeting a certain sector of a market. Frédéric Savoir agrees: On the whole, there's more artistic licence and expression in the games industry over here.'

Frédéric and Eric are determined to break the mould with Amazing Studio's first game, Heart Of Darkness. 'We didn't want to do a French game. We wanted to do an international game,' claims Frédéric.

And Amazing Studio have a better chance of success than many. Most of the team have already tasted international acclaim, having worked on two groundbreaking French games for neighbouring Parisian outfit Delphine Software. Before leaving Delphine to set up Amazing Studio in early 1992, Frédéric, together with other members of his team. was responsible for the widely applauded Flashback for the Mega Drive, while Eric was sole designer and programmer of the landmark Amiga game Another World.

It's probably no exaggeration to say that these two games established France's place on the videogames map. Their combination of sophisticated

animation technology and original scenarios set the standard for French game design to match.

Amazing Studio are

guarding their first project with the kind of secrecy one would normally associate with a Japanese developer. Such is the incestuous nature of the French games community that rival developers

'In France there is more interest in the individual artists and programmers. I think games tend to be

more imaginative'

have been extremely curious to find out exactly what direction they have taken in the two years since leaving Delphine.

Heart Of Darkness, which is benefiting from ambitious production values, is a more internationally oriented game than either Another World or Flashback.



Superb animation is a major feature of Heart Of Darkness. Amazing Studio's beautifully realised arcade adventure

'We're going for a more American approach to the design of the game,' says Frédéric. 'This is one reason why we chose Virgin to publish the game - they have a more international outlook."

Having already learned to deal with foreign sensibilities with their previous games (Flashback needed a scoring system in order to avoid disorientating American Genesis players brought up on a staple diet of shoot 'em ups),



Andy, the central character in Heart Of Darkness, is typical of the stylish French approach to character design. All of the rendered graphics in the game were expertly created using 3D Studio

French developers



The transition between the ingame graphics and the pre-rendered cut-scene animations in *Heart Of Darkness* is seamless. The combination of both types of animation advances the storyline extremely well

Amazing have made Heart Of Darkness an engaging blend of cartoon-style animation and computer-generated cinematics. Christian Robert, who designed the characters and backgrounds, and Fabrice Visserot, who realised the cinematic sequences, have pulled off a remarkable technical feat, but Heart Of Darkness also has all the hallmarks of a superbly playable videogame.

'We've set out to combine the playability of a Japanese game with the animation of a cartoon,' says Frédéric. 'We wanted to have a good storyline, not just create a great action game.'

At its most basic, Heart Of Darkness could be described as a highly sophisticated Another World. Although the game's central character, Andy, moves in only one plane, the richness of the backgrounds and the level of player interaction mean that it is considerably more advanced than the Amiga classic.

The environments and cut-scenes were all rendered in the ubiquitous 3D Studio. 'At the beginning it was a big challenge to

produce rendered graphics that didn't look rendered,' recalls Eric. 'We didn't want that computer graphic look that 3D Studio usually has. You know the kind of thing high-tech spaceships, etc. We're using computer graphics to provide a unity between the cinematics and the actual game.'

Despite the prettiness

of Heart Of Darkness's backgrounds, it is the ingame animation that will undoubtedly attract most attention, given that this is the department in which the game's forerunners excelled. Unlike Another World, which used realtime polygon animation to save disk space (the entire game graphics only took up 64K!), Heart Of Darkness relies on traditional computer animation. And while Flashback used a total of 1,000 rotoscoped frames (compressed using a special technique), the main character alone in Heart Of Darkness takes up 1,500 frames. And that's only in one direction he's flipped in realtime to generate the other 1,500. Even more

impressive is the fact that Amazing have allowed control over the main sprite in every single frame.

As well as being used for the backgrounds, 3D Studio was the main animation tool. It wasn't intended to be, though: 'Initially we thought that the characters in the cinematic sequences would be done in bitmap form,' explains Eric. 'But after working on 3D Studio for a good while, we realised that it would be possible to do them that way. Virgin thought we were crazy trying to do it, but we did some tests and they proved successful.'

Both the backgrounds and the character animation in *Heart Of Darkness* have been handled with consummate professionalism – the game contains arguably the best *3D Studio*-rendered visuals ever created. 'We've steered clear of just moving the camera through scenic backdrops,' says Frédéric. 'We think it's important to have good relationships between the characters, just like a good movie or a good cartoon.'

In a replay of the release of Another World in 1991 – the secrecy surrounding the game meant that it caused a sensation when it was finally unveiled – Amazing are keeping Heart Of Darkness under wraps for the time being. Eschewing the usual course of hawking products around the mainstream games magazines, they will be debuting the game in Edge closer to its release date next year.



At the centre of the *Heart Of Darkness* story is The Master. Images like this are a testament to Amazing's *3D Studio* skills



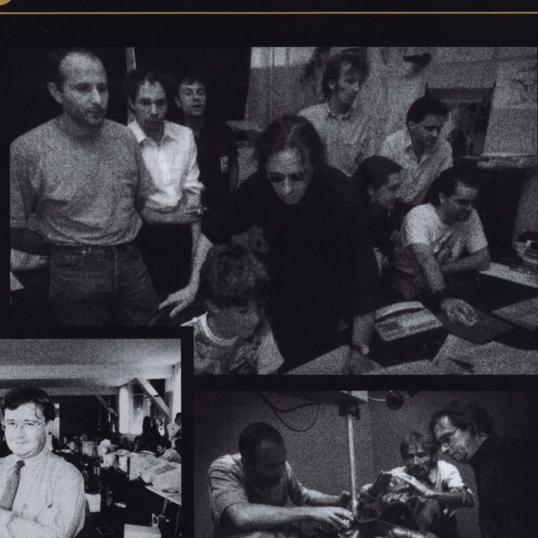


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Cryo

With a wealth of home-grown experience and talent to draw on, Cryo Interactive are another adventurous band heading for new horizons



Cryo's Jean-Martial Le Franc (above) has created a versatile company made up of a number of separate teams. The *Commander Blood* team (top) includes Philip Ulrich, Didier Bouchon and Olivia Carado (right)



Revenge (working title), a project for Mindscape, has been in development at Cryo since March this year



Revenge incorporates three different styles of gameplay and includes 500-600 sequences of cinematic animation



A rendered fly-by of San Francisco's Chinatown provides a backdrop for one of the shoot 'em up sections of Revenge

EDGE

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Cryo's first two games, Dune and KGB, were both well received outside France, largely because they both contained a strong narrative structure. 'I still think that the most important thing is to establish strong storylines,' declares Jean-Martial. 'Then you've got more chance of appealing to a worldwide audience.'

Cryo Interactive is actually part of a larger company which also incorporates a high-end computer graphics arm called ID3D and a film production division, Compagnie des Images, whose first film, Son Of The Shark, was nominated for the French equivalent of the Oscars earlier this year. The increasing crossover between the three branches (with Cryo providing images for the movie company in exchange for script writing) is



Commander Blood is Cryo's follow-up to the unusual Amiga adventure, Captain Blood, which attracted a cult following. The original was created by Philip Ulrich and Didier Bouchon before they joined Cryo

something that Cryo games will undoubtedly benefit from.

Cryo have done much to change the face of the French videogames industry. Because of their success in attracting investment from the likes of Virgin and Mindscape, they have been able to build up large development teams, thus minimising the damaging effects of poaching of staff that has beset the traditionally incestuous French industry and prevented any one company from attaining world-class status.

Although Cryo are still firmly rooted in the pre-rendered adventure genre with games like The Lost Eden, Dragon Lore and the forthcoming Alien and Revenge, Jean-Martial predicts that new

technology will enable them to branch out in new directions: 'We're exploring realtime polygon animation and realtime texture mapping. 'We have one big project incorporating both of these. I think we'll continue to blend various techniques, though, as in Commander Blood.'

Commander Blood, a PC
CD-ROM game with pre-rendered graphics, digitised video and a fast
3D polygon engine, promises to be just as bizarre as its predecessor,
Philip Ulrich's and Didier
Bouchon's highly strange late-'80s space adventure, Captain Blood.
'Sometimes you just have to take a risk,' shrugs Jean-Martial. 'It's weird, but it's a weirdness that I think will travel.'





The 3D Studio-rendered images in Commander Blood (top) are complemented by digitised video, shot using models constructed in the Cryo offices (above). The character interaction in the game is handled by a versatile scripting program

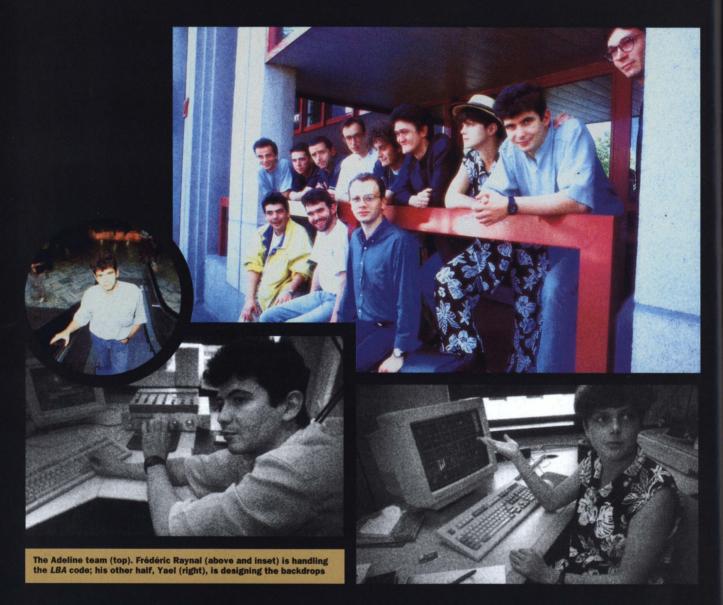




Cryo's *Alien* project for Mindscape (above and top) features some superb SVGA rendered graphics

Adeline are a little company who look like hitting the big time with their first project

time with their first project





Humour plays a large part in LBA. Rendered scenes like this serve to illustrate the progression of the story



LBA's CD-streamed cut-scenes provide ample opportunity for the Silicon Graphics-rendered characters to show off

magazine November 1994

hen renowned French programmer Frédéric Raynal left Lyon-based Infogrames in early 1993 to set up Adeline Software, he took with him four of his collaborators on the seminal 3D polygon adventure Alone In The Dark. The subsequent defection of several more Infogrames staffers took the number of Adeline employees to 12 and established Frédéric's team as a powerful force in the French videogames industry. Adeline's first game, Little Big Adventure (see Edge 13), which has been in development for 20 months and is due out in November, looks set to be one of this year's most exciting and stylish PC releases.

Ironically, Little Big Adventure's style owes more to the console school of game design than to traditional PC adventure fare. Although polygons are central to the game, the characters, which are all displayed in SVGA and beautifully Gouraud shaded, look distinctly cartoon-like, in contrast to the angular limbs characteristic of Alone In The Dark.

According to Frédéric, much of the inspiration for LBA came from Zelda III on the SNES: 'There's something very magical in Zelda. It's a game designed

essentially for kids but it also appeals to adults. Little Big Adventure is a compromise between the two because we have smooth cartoon-like graphics matched with the variety in gameplay that Zelda is famous for.'

The higher resolution of LBA's characters allowed Adeline to improve the quality of the backgrounds too. AITD used bitmapped backgrounds because anything more sophisticated would have looked out of place beside the relatively crude polygons: LBA, however, features wonderfully rendered scenery, which adds hugely to the game's appeal.

Although many

developers are still sceptical about the effectiveness of polygon animation, Frédéric is enthusiastic about the technique. 'With polygons, we can achieve in a couple of lines of code what would normally require thousands of sprites to display,' he argues. 'I enjoy using this technology and besides, all of the new platforms are featuring polygons highly, so it makes sense to use polygons.'

LBA's polygon engine is without doubt the most sophisticated ever seen in a PC



LBA's beautifully smooth polygon animation was created by Didier Chanfray, who was also responsible for AITD's animation

game. Many of the characters in the game are made up of at least 200 polygons in SVGA mode (which uses over four times the processing power) and the animation runs at speeds of up to 90 frames a second on a DX2.

'With polygons, we can

achieve in a couple of

lines of code what it

would require thousands

of sprites to display'

'Initially we had objects drawn in about 20 polygons,' recalls Frédéric, 'and then for some reason the artists started drawing objects using about 200 polygons and it still ran fast enough, so we thought, oh well, let's see what it can do.'

Despite its technical complexity, Little Big Adventure is a game that appears to have genuine mainstream appeal – something that AITD, with its angular characters, didn't. 'Alone In The Dark was our first experiment with polygons, and we had no idea what direction it would take us in,' admits Frédéric.' He will be hoping that LBA is able to conquer the US market and achieve greater international recognition than AITD managed.



LBA's huge gameworld offers an estimated 100 hours of play. At one point, you have to make use of this friendly winged creature to travel around

Infogrames





The AITD3 team (above and top) includes seven artists known collectively as Strange Lullabies. The game's producer, Hubert Chadot (right), is enthusiastic about the new techniques to be used in AITD3





An improved polygon engine will give AITD3 extra character detail. More viewpoints will also be included



As in *AITD2*, it's possible to control different characters in *AITD3*. Here, Indian magic has changed you into a cougar

1994

France's biggest games company is exploring new avenues as well as building on past successes

f any French developer can claim to have a significant presence in the world videogames market, it's Infogrames. Based (together with Adeline Software) in the southeastern French city of Lyon, Infogrames are by far France's biggest games company, with 150 staff occupying two-and-a-half floors of a large tower block in the industrial suburb of Villeurbanne.

Founded in 1983 by Bruno Bonnel and Christophe Sapet, Infogrames have spent the last ten years building up a colourful catalogue of games for a wide range of platforms. Memorable 16bit titles include Hostages, Alcatraz and North And South, but it was the influential Alone In The

characteristics of French game design: a strong story, well-designed characters and, of course, technical innovation. But, like Another World (a similarly innovative French adventure), it suffered from a limited lifespan. The second instalment, which arrived in January this year, met with more widespread acclaim. It tackled the principal flaw of the first game by including more backgrounds and locations, but it still didn't please everyone; while many people revelled in the combat-oriented gameplay, others maintained that it was too tough.

With AITD3, Infogrames hope to get the balance between puzzlesolving and combat exactly right. With the talents of 25

people behind it, the game's Wild West ghost town scenario is exceptionally well-realised. 'We're trying to make a cocktail of the first and second games,' says project manager **Hubert Chardot**. 'We're trying to keep the atmosphere of the first game and

we're making sure that there's not too much fighting. Alone 2 was too hard for beginners.'

For PC owners with CD-ROM drives who haven't yet sampled the delights of the second game, the company are planning to release a new CD version of AITD2, which, as a bonus, will contain a whole new section in



This Wild West ghost town is the location for the latest episode in the Alone In The Dark series. Creepy goings-on abound

which the player gets to control Grace in the grounds of the mansion, as well as a complete digital soundtrack.

Infogrames have already refined their development tools for the next game in the AITD series. A demonstration of a powerful realtime scrolling engine was enough to convince Edge that Infogrames have the technical expertise to compete with the best programmers in the global PC games market. This engine, which is as smooth as Doom but offers much more flexibility and detail, opens up new dimensions in AITD's gameplay. 'Alone 3 is the last in the series to use the old system,' reckons Hubert, 'but if we can, we might even manage to squeeze some of the new system into sections of Alone 3.'

However, Infogrames are well aware of the dangers of committing all their resources to one style of game. 'I don't think that it is the only way forward for the future,' accepts Hubert. 'It's just one way. Things have to change. Nobody has any fun if things don't change.'

The French videogames

industry has matured rapidly since the days of 8bit computers. The prejudice that French games are unsuitable for a global market is rapidly being replaced with a recognition that leading French developers have the technical ability and the artistic talent to become a major force in interactive entertainment.

Infogrames have the technical expertise to compete with the best programmers in the global

PC games market

Dark (created largely under the direction of Frédéric Raynal, who left Infogrames to establish Adeline) that established the company's profile outside their homeland. The first game in the series was released in early 1993 and has since gained cult status.

It's easy to pinpoint AITD's appeal. It possesses all the classic



An early version of AITD3's central character, Edward Carnby, without the costume he will sport in the final game, finds himself in a dodgy situation

Doom II: Hell On Earth



'Arguably the most playable game on the PC' in reference to the original Doom doesn't exactly tally with Edge's review of id's firstperson shooter (the game infamously scored 7/10 in issue seven), and there are no calls here for enhanced interactivity with the monsters you meet. Beware issues even on a grunty 66MHz DXZ, though.

Format: PC

Publisher: Virgin

Developer: Id Software

Price: £50

Size: 5 disks

Release: October 10

ust nine months after *Doom: Evil Unleashed* erupted onto the PC with its explosive mix of gunplay, gore and strategy, id Software have returned to the fray with a follow-up that promises even more refined blasting action. Although id released the first game on a 'try before you buy' basis – the initial episode was available free but subsequent ones had to be paid for – *Doom II: Hell On Earth* has been placed on a more conventional commercial footing, with id

obviously assuming that *Doom*'s reputation ensures sales of the sequel.

In the initial stages of *Doom II*, it's hard to avoid the suspicion that you've booted up its predecessor by mistake: the backgrounds are the same, the monsters are familiar, and the

gameplay is apparently unchanged. As you get further into the game, though, *Doom II* begins to reveal its unique attraction.

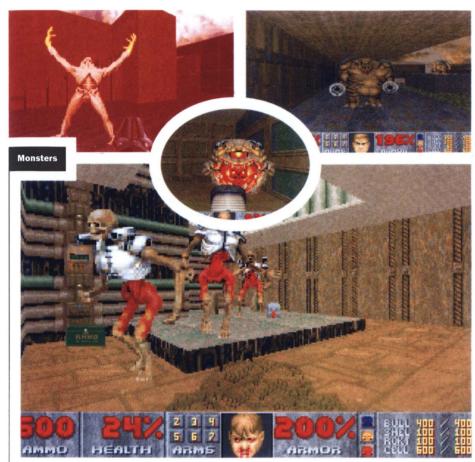
One of the main attractions of *Doom* was its stunning graphics. Not only does *Doom II* clip along faster than any other game on the market, but the variety of the visuals has been dramatically increased. With the benefit of hindsight, you realise how much of *Doom* consisted of monotonous brown walls. Now there's a much greater range of textures, including brickwork, wood panelling, rough-hewn granite and stone slabs.

More importantly, id have made subtle but significant alterations to the gameplay. The shift of emphasis away from utter carnage and towards problem solving that began in the last few levels of *Doom* has been continued in *Doom II*. Switches are scattered liberally throughout the game; the right combinations



The lethal Cyberdaemon boss from the original game makes several appearances in the sequel. Six or seven shots from the BFG are needed to stop him, and your life expectancy at this range is short. This new fiend (inset) only needs a line of sight to turn you into a human candle

1994



Doom II boasts six new enemies. The fiend (top left) sets fire to you from a distance. The fat man (top middle) is equipped with twin fireballs. The skeletons (above) throw fireballs which follow you around corners. The spider (top right) posesses plasma weapons. The sergeants (above right) are weak but their guns have a long range. The Cacodaemon (inset) launches flaming skulls and explodes when he dies

have to be activated to open doors and trigger various other events. Even ostensibly simple rooms often require strategic decisions to be made. Although the pleasure of slaughtering your enemies never wears off, it's unquestionably more satisfying to have to think as well as use your reflexes.

It's this depth that makes *Doom II* more satisfying to play than any other game in its genre. *Alien Vs Predator* (see page 78), *Terminator Rampage* and *Monster Manor* all suffer from shallow gameplay that soon becomes tiresome. In *Doom II*, however, there's always something to be achieved, whether it's finding a keycard to allow you access to a new section of the level, getting hold of a health top-up or a more powerful weapon, or just figuring out a way of dispatching that particularly bothersome monster before he kills you (again).

But although *Doom II* does require a fair degree of logical thought, the strategy involved is never so tortuous that it detracts from the game's playability. Even if the same level has been testing your capabilities for an hour, you know that the solution to your problems lies in

front of you, and it's just a question of working it out. It's an article of faith in *Doom II* that it's always you at fault, not the game.

As you explore *Doom II*, it becomes apparent how much more complex the level architecture is compared to the first game. The corridors and rooms are as labyrinthine as ever, but numerous lifts, flights of steps and darkened pits give the game a much greater vertical dimension. In the open-air stages, for example, you find yourself battling through castles several storeys high – as well as roaming around at ground level, avoiding gunfire from snipers taking potshots from vantage points high above you.

Doom II also boasts a huge number of secret areas. Some are relatively obvious, while others take a while to figure out. The further you get into the game, the more cunningly hidden they are, but they're never so obscure that you give up looking. And they're rewarding when you find them: one of the best-concealed consists of two Nazi-ridden levels of id's Wolfenstein 3D, the precursor to Doom.

Id have deliberately increased the challenge in $Doom\ II$ (if you can't take the heat, they





Multiplayer

Leaping out behind your best friend and turning them into dead meat with a well-aimed shotgun blast is what multiplayer gaming is all about. In recognition of the network game's contribution to Doom's success, Id have enhanced both the death-match and co-operative modes in Doom II. From the DOS prompt, monsters can be turned off, sped up by three times or made to respawn every eight seconds. Your own speed can be increased by up to 250%, although other players are informed if you take advantage of this option. For the seriously vain (or bloodthirsty), matches can be recorded and played back at a later date. However, if you haven't got access to an IPX network you'll just have to dream.



As in the first game, your enemies fight each other in *Doom II*, which makes your life slightly easier



rather unsympathetically recommend that you put in some practice on the first game). Even on the lowest of the five difficulty levels there are numerous enemies to contend with, and on the hardest one (apart from the unplayable 'Nightmare' level) the hordes of rampaging foes make for a frantic blast. The monsters are generally faster and more intelligent than they were in the original game, and it's now only the lowliest humans who blunder round corners into your ambushes. id have made

like these make it one of the goriest games on the PC, but also one of the most atmospheric

one concession to frailer gamers, though: whereas the three sections that constituted Doom were completely separate, which meant that you had to start each one with the rather ineffectual default weapon, the 30 levels in Doom II are continuous, so you can build up your arsenal with impunity.

At a time when

the minimum machine specification for PC games is rising faster than the price of high-end machines is falling, it's refreshing to see that *Doom II* runs acceptably on a relatively lowly 486 – although there is noticeable slowdown on some of the more highly populated levels later on in the game, even on a 66MHz DX2 system.

The music, week and beepy in *Doom*, remains uninspiring in the sequel, but the sound effects are consistently excellent. Play



Cloven-hooved daemons melt after you ignite a room full of barrels (top). A splintered skull signifies the end of this fat man (above)

the game on an Ultrasound-equipped machine, turn the music off and the sound effects up to full volume, and you're in for a treat.

Doom If's biggest drawback is its price. £50 is a lot to pay for any PC game, but it seems positively extortionate when you consider that thousands of excellent extra levels can be obtained free from various bulletin boards (id's authoring software is available to any amateur level designer) and all you're really paying for is the game engine.

But that shouldn't be allowed to detract from *Doom II*'s achievement. Id have managed to improve what was already arguably the most playable game on the PC, and in the process have set new standards to which other PC games will aspire.



Leaving this room alive requires both skill and strategy (top). This skull marks the level exit (above)

Edge rating:

Nine out of ten

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PS3 graphics meltdown The Darkness delivers the next level of firstperson excitement page 20

Resistance makes the wait all worthwhile The PS3's premium launch game gets ripped apart inside page 52





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worth kipping
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What happened when we
went to Japan and bought
the second PS3 in
the world
page 42

PS2 Larry
reflects real
life accurately
"Larry has to dress as a
tree to seal the deal, but
who hasn't been in
that situation?"
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MotorStorm:
Is it really as
good as the demo?
Or have Sony pulled the
mud over your eyes?
Find out the truth
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Alien Vs Predator

Format: Jaguar

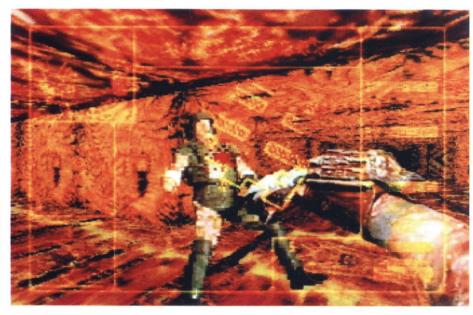
Publisher: Atari

Developer: Rebellion

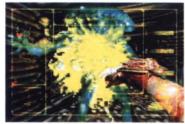
Price: £60

Size: 32 Mbits

Release: October



There is action in Alien Vs Predator, but it's inconsistent and, unlike Doom, lacks variety. Here, a hapless Marine feels the full force of the Predator's powerful arm







An alien explodes after a swipe from the Predator's arm (top). Waggle the joystick to get rid of this facehugger (middle). If you're playing the Alien, you can use your tail as a weapon (above)

fter an agonising wait for Jaguar owners, Alien Vs Predator has finally managed to claw its way out of the Rebellion offices and onto the Atari production line. And not before time, too: AVP is a crucial component of Atari's sales strategy and the company are counting on the game to boost hardware sales

this Christmas.

the gameplay.

Although AVP's 3D engine was completed some time ago, the game's release was put back by several months so that extra elements could be added to it. Delaying the product so that more meat could be added to its skeleton would have been acceptable if the results had justified the wait. But it seems that all AVP has gained in the interim is a few token Doom-inspired touches that contribute little to

The first thing you notice about AVP is that the front end is incredibly slow - game data takes such an eternity to decompress into the Jag's internal RAM that it almost feels like it's being loaded from CD-ROM. On starting the game, you can choose to play either the Colonial Marine, an Alien or the Predator. If you select the Marine, the task is to find the ship's security pass, set off the self-destruct mechanism and then escape. The Predator's target is to capture the Alien queen, while the Alien's aim is to rescue the queen from the Predator's lair. Each character has different (albeit unremarkable) abilities: the Alien can move fast and attack quickly; the Marine has access to a variety of useful weapons; and the Predator is able to call upon high-tech gadgets like an invisibility filter and a wrist blade.

Unfortunately, in this case the inclusion of three different scenarios and three characters is far from being a recipe for longterm appeal. Basically, there's no real strategy in Alien Vs Predator. Whatever character you choose, you end up doing essentially the same thing: wandering aimlessly through corridors in search of enemies to kill. Occasionally you have a brief, violent and ultimately pointless

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Move backwards, firing constantly, and this Alien explodes in a rather unconvincing manner



Use the map to find your way around. You'll need a motion tracker to locate the Aliens, though







AVP offers a choice of three characters: a Colonial Marine (top), the Predator (middle) and an Alien. Each has a set mission

encounter with a lone enemy before continuing on your way, but the truth is that Rebellion haven't been able to make the 'search and destroy' gameplay in *AVP* anywhere near as enjoyable as it is in *Doom*. And to make matters worse, whenever you kill an Alien it disintegrates into a lethal pool of acid that, particularly in narrow corridors, acts as an infuriating obstacle.

One of the things that makes *Doom* so satisfying is its tortuous and cleverly designed levels, complete with switches, stairs, platforms and treacherous trenches full of acid. In contrast, the levels in *AVP* are not only completely flat and relatively devoid of obstacles, but they're remarkable for the complete absence of any puzzles.

AVP is also distinguished by its lack of tension. In *Doom* you never knew what you'd find around the next corner; in AVP it's usually nothing. Some atmospheric music would have

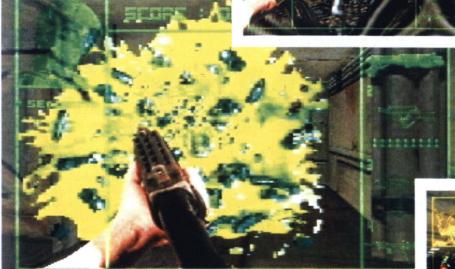
helped create suspense, but all AVP can offer is an irritating engine drone.

Despite some attractive backgrounds and reasonable scrolling, AVP has turned out to be a lumbering, lame and unfocused imitation of Doom that only the most masochistic gamers will get anything out of. Those people who held on to their Jaguars in the belief that AVP would rescue the machine from mediocrity are likely to be sorely disappointed.

Edge rating:

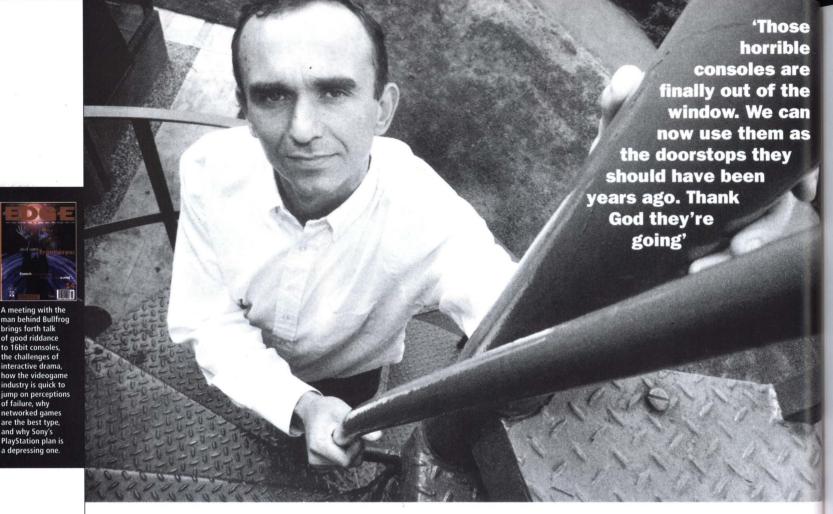
Four out of ten





The textured bitmaps are impressive in some sections (main) but just look garish in others (inset). One of the game's biggest problems is the speed of the action. Before they start firing, these Marines (right) just stand in front of you for for several seconds, waiting to be shot. Your character also takes a while to wind up an attack





An audience with

Peter Guildford science The catalyst for a trio of isometric Volume 100 employer Guildford science The catalyst for a trio of isometric attributed by the catalyst for a trio of isometric attributed by the catalyst for a trio of isometric attributed by the catalyst for a trio of isometric attributed by the catalyst for a trio of isometric attributed by the catalyst for a trio of isometric attributed by the catalyst for a trio of isometric attributed by the catalyst for a trio of isometric attributed by the catalyst for a trio of isometric attributed by the catalyst for a trio of isometric attributed by the catalyst for a trio of isometric attributed by the catalyst for a trio of isometric attributed by the catalyst for a trio of isometric attributed by the catalyst for a trio of isometric attributed by the catalyst for

Peter Molyneux's Bullfrog are one of the videogames industry's greatest success stories. **Edge** wants to know what happens next

eter Molyneux has come a long way in the last seven years. During that time, the company he founded, Bullfrog, has outgrown its humble

beginnings – it initially operated out of his flat – to become a fully fledged business with 100 employees and plush offices in a Guildford science park.

The catalyst for Bullfrog's success was a trio of isometric strategy games: *Populous*

(the first 'god' game), Powermonger and Syndicate, all three of which enthralled gamers with their depth and complexity. Since then Bulldog have produced the critically lauded Theme

Park and are now hard at work on their latest creation, Magic Carpet for the PC.

In their relatively short history,
Bullfrog have barely put a foot wrong, with
an enviable catalogue of classic games to
their credit. But in the videogames industry,
as in Hollywood, you're only as good as
your last product. **Edge** questions Peter
Molyneux – a man regarded in some
quarters as something of a visionary, with
an almost instinctive ability to produce
playable games – about the changing games
market and Bullfrog's place in it.

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Edge *Magic Carpet* has been in development for some time now. How is the game progressing?

Peter Molyneux We've been working on it for two years using a new vector routine that we've been developing. The reason we've been using this is that I knew that we couldn't really produce any more of those isometric games. We've done those now. Theme Park was the last of that type of game. So we needed something a little bit more up-tempo to persuade people that we were clever. Magic Carpet is essentially a polygon-based engine with nice depth-cueing in it. The game itself is similar to what you saw before (see Edge 5) but a bit more defined now. The main character is a wizard flying around on a carpet able to cast a whole range of spells and with a base castle that he has to build up.

Edge What do you think about the state of the videogames market at the moment?

Peter The current trend in games like simulations, adventures and some sports sims is that they are getting progressively harder, cleverer and more challenging. But this doesn't necessarily make them better games. The trouble is that a lot of games

are getting so hard that only the very best gamers can play them. The first rule of game design is that you mustn't produce games that are too complex for people to play. I'm thinking directly of games like the Ultima series, which developed from an accessible thing, around Ultima III or IV, into a huge monolith-type underworld that was so all-encompassing, so big, that it... well, I was reading in one review that the game starts to get good after four hours. So I think, do I really want to invest four hours in something that may or may not be any good? Being overly complex for the sake of being complex is not a good idea. Complexity is good as long as it doesn't get in the way of the game.

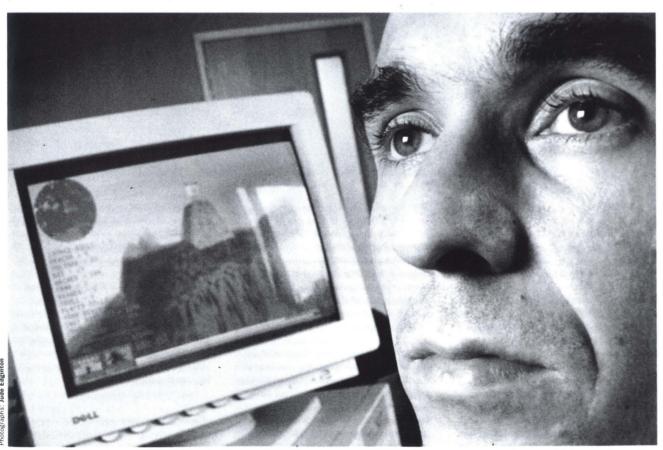
The other point is that there seems to be a huge, huge backlash against virtual reality. No-one's talking about it any more. We're into a new thing called interactive drama. That's our new key word for 1994/95. Everybody's doing interactive drama with interactive plots and interactive characters. But I think that it's going to be a tough, tough thing to do. Hollywood spends millions of pounds on scripts. They have hundreds and hundreds of

scriptwriters and they get it right once or twice a year, if that. And little game designers like us are coming along and we're going to write this script which is going to have infinite variations, is going to be as entertaining as any Hollywood film, is going to have cinematic sequences in it, and we're going to sell it for four times more than you can buy a video for. There's something wrong there. Either we're very, very clever chaps and Hollywood has been doing it wrong for the last 100 years, or perhaps we're talking out of our arses. I know of companies that are spending five million dollars [Wing Commander 3], which is a hell of a lot of money to spend. I'm sure it will be a good product but whether or not it will justify that money is a different matter.

interview

Edge What's your opinion of the current hardware situation?

Peter It's good news. Those horrible consoles are finally out of the window. We can now use them as the doorstops they should have been years and years ago. I've always disliked the SNES and Mega Drive. As a designer I've despised them. Thank God they're going.



'PCs are too much bother, even with CDs. You've got to configure one of the 30 trillion soundcards' 30 trillion settings. I don't understand all these DMAs and IRQs and all that crap. I just fiddle around until I get it right. Until they sort that out, the machine is going to terrify people'

99

interview

Edge Does that animosity extend to the next-generation consoles?

Peter At least they're not less powerful than the Amiga was and at least they've got hardware support that lets us do the sort of game we want to do. It gives us more scope. The only bad side of it is that everyone who has heard about the PlayStation and Saturn is expecting a machine that can do just about anything. I mean, they can already see the ultimate game in their mind's eye: photorealistic graphics, bucketfuls of sound, huge amounts of gameplay. The problem is that you've only got just over 2Mb of RAM to fit it all into.

one of the largest electronic producers in the world. The PlayStation has bags of processing power, lots of chips and it works in the same way as *Magic Carpet* so the conversion will be a breeze.

Edge Will the 3DO become a lame duck when the PlayStation is launched?

Peter Well, Trip Hawkins did say that it was 50 times faster than anything else, but what he was referring to was probably the Commodore 64! That's the problem: huge expectations. I couldn't wait to get my hands on one, but when it came along the games were worse than anything on the PC or anything else – hence the phrase '3DOA'. You know what this industry is

good development hardware. It's all there. It's a bit depressing. I wish that 3DO had been more successful. A company run by Trip is a hell of a lot better to deal with than something like Sony.

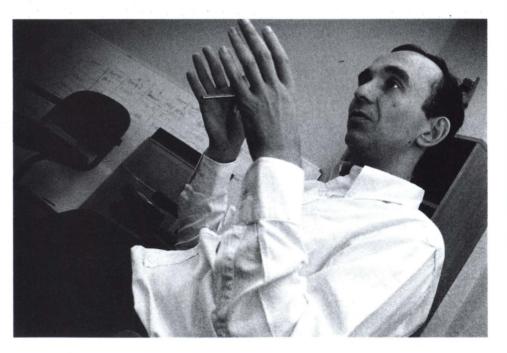
Edge Why?

Peter It's just that Sony are a huge, multibillion dollar corporation. They've got rules and agreements for the contracts. It's hard to get in touch and you don't mess with them.

Edge What about the PC? Does it have a secure future?

Peter Intel would like to think so. There was some research done by Intel, I believe, which revealed that there were 40 million

'Interactive
drama is going to
be a tough, tough
thing to do.
Either we're very,
very clever chaps
and Hollywood
has been doing it
wrong for the last
100 years, or
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of our arses'



Edge Which of the new consoles has the best chance of success?

Peter The PlayStation.

Edge So a company like Sony with no videogames history has more chance of pulling it off than established operators like Sega and Nintendo?

Peter I think that when Sony do something they probably do it right. And they've decided to come into the games business and they haven't got all the hang-ups that a lot of the other hardware manufacturers have. They haven't picked up any bad habits. And they haven't got teams of programmers that they have to support who say, 'We want to do Mario 5.' They're coming into it from a purely 'This is what we can produce' angle. And it's got an impressive spec. It easily outperforms any machine currently out there. Sony are

like: as soon as there's a scent of death, everyone jumps on the hearse. So now everyone is saying, 'Ah, 3DO's crap.' And then, in your own magazine, Trip says, well, they've beaten us on the current spec, but when we finish 3DO2 people are going to love it. Are you going to buy 3DO when you know that 3DO2 is just round the corner? No, of course not.

Edge So you don't think Bulldog will prove to be the saviour of 3DO?

Peter They haven't even designed it yet. It's so full of ifs and buts. We had one of the first 3DOs in the country and it's been a nightmare to develop for it. The compiler hasn't worked, the hardware hasn't worked, there have been all these hardware glitches, etc. To give Sony their credit, they've actually got a piece of plastic they can put in front of you, they've got

PC sold last year, which is more than the number of cars. That means that there are a lot of PCs around. And the bestselling games shift around 350,000 copies.

Edge Will the PC eventually destroy the console market?

Peter Definitely not. PCs are too much bother, even with CDs. You've got to configure one of the 30 trillion soundcards' 30 trillion settings. I don't understand all these DMAs and IRQs and all that crap. I just fiddle around until I get it right. Until they sort that out, the machine is just going to terrify people.

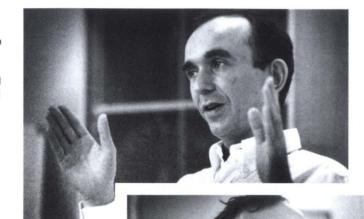
Edge Do FMV-based games have anything to offer gamesplayers?

Peter We've been approached a lot of times to do film licences. It's always either been that the film is too late (you can't do a game in three months) or the restrictions

EDGE

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placed upon it are too great. McDonalds approached us for a joint game venture, and they specified that absolutely nothing in the game must contain any sharp edges because apparently the kids can imagine Ronald skewering them or something - and you must use these characters this way and paint them this colour... Basically, they say, 'Do this game this way and don't do it any other way.' And the same applies with Hollywood. Unless you're in at the very start of filming it would be very difficult to construct a worthwhile game around it. Edge Where is the games market going? Peter I think that Hollywood will become increasingly interested in it. But beyond



'Everyone who has heard about the PlayStation and Saturn is expecting a machine that can do just about anything. The problem is that you've only got just over 2Mb of RAM to fit it all into'

that, there are much larger companies who have got no knowledge of the games industry but have billions and billions and billions to spend and are just snapping everything up.

Edge GTE, for example?

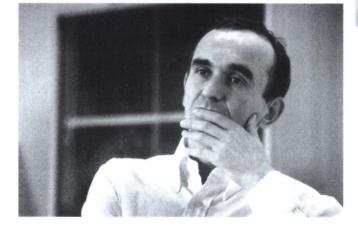
Peter Yes, that's one of them. They're on the snap-up at the moment. In some ways it's great because they've got the money to burn. In other ways it's really depressing because those companies are going to buy out and make some very bad decisions and they're going too lose an awful lot of money. I'll give you an example, but with no names. I know a company of people who sit around producing initial game specs. Now we all know that, perhaps with the exception of a horizontal shoot 'em up, the original specs bear no relationship to the finished product. So they have no experience, no game, but have just been bought out for a lot of money. Absolutely farcical. So what is going to happen is that you'll have all these games coming out with all the Hollywood input, but they'll be complete shite.

Edge Surely you wouldn't describe LucasArts games as 'shite'?

Peter No. They do get it consistently right but if they couldn't get it right, then who else could?

Edge All your games are very dependent on networks and modems. Why is that?

Peter I've always felt, right from *Populous*, that the best games you can play are



against someone else. I could work for ten years on a computer opponent and it would be crap compared to playing against a human. In America, networked games are really taking off. The free local calls help, but all the games are terrible on these bulletin boards. We'll be doing a network version of Magic Carpet.

Edge Are videogames too violent?

Peter Definitely not. If we banned violence we'd just end up doing what Nintendo do. You should always know that you're killing someone. PC games are played by the same audience who watch '18' films. You'll only drive it underground and it's nothing new anyway. It always has and always will be there. What's the point in banning it

when you can buy it in the newsagent? All this fuss about porn and violence is just the media's current fad. You're definitely not going to stop it.

Edge What types of game do you personally prefer to play?

Peter Sims, definitely. You can go into an arcade and spend £5 on the latest games and be bored with them. Only on the PC can you really create something. With games like Sim City 2000, Theme Park and Civilization, it's all up to you. I also like roleplaying games. Both genres provide the best value for money. With honourable exceptions like Doom, of course. On a console, something like Super Mario Kart or perhaps an EA sports sim.



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EDG£

CD strategy looks strong on paper, promising a system capable of delivering

of a snail-like single speed optical drive

UK distribution, it's hard to see it reach

Neo-Geo CD: SNK's new machine debuts in Edge/p6 • VR32: latest info/p9 • JAMMA:
Japan's biggest coin-op show/p10 • AMOA show: Cruis'n USA and Killer Instinct coin-ops/p13
• CSG show: latest Saturn softs/p14 • GLINT: PC graphics get a new standard/p16



The latest **news** from the world of interactive entertainment

UK launch for Bearing a readymade range of arcade-quality games, SNK's Neo-Geo CD



Neo-Geo CD arrives in the UK



The new unit is sturdy and attractively styled. The flip-top CD lid is raised by a simple press (above)

our years after SNK first unleashed its potent Neo-Geo console on Japan, the Osakabased company has launched a more determined attack on the domestic market with the introduction of the Neo-Geo CD – a repackaged, restyled and remarketed version of the arcade system that achieved limited penetration into the home.

As reported by **Edge** last month, SNK released a 'special edition' frontloading model in

Japan on September 9. The voracious Japanese buying public consumed all 30,000 units on the first day of sale.

From now on, though, a new, toploading model will bear the Neo-Geo CD badge. This is the machine that will soon be available officially in Britain, following the acquisition of the UK wholesale rights by New Generation, a recently for

Generation, a recently formed company set up specifically to distribute Neo-Geo CD hardware and software. With SNK's new London office primarily concerned with the Neo-Geo arcade system, and no established distribution channels for the home machine, NG has considerable freedom to develop the market its own way. If all goes



SNK's library of arcade games includes some truly memorable titles. The sheer power of some Neo-Geo software makes the machine

well worth considering

Neo-Geo: the story so far

The Neo-Geo home system (above) went onsale in Japan in March 1990. packaged with a four-button joystick and a memory card. In a market where 8bit Famicom and PC Engine games were the norm, its arrival was met with general disbelief (and not just because of the price of the software). The technology was more advanced than almost anything available at the time, and delivered vivid, powerful games - SNK simultaneously launched a line of cart-driven Neo-Geo coin-ops, which are still thriving.

Given the age of the hardware, the Neo-Geo's spec is still impressive. Apart from the inclusion of an extra 430K VRAM. 64K SRAM and 56 megabits of DRAM, the CD machine is virtual identical. At its heart is a 16bit 68000 running at 12MHz, supported by a 4MHz Z80. It can handle up to 4,096 colours onscreen from a 16bit palette, with three simultaneous scrolling playfields and up to 380 hardware sprites (plus hardware scaling support). There is also some meaty sound from a 13-channel Yamaha 2610 chip.

High-memory, high-price cartridges and an entirely arcade-driven software library (no shortage of beat 'em ups) have limited the appeal of SNK's cartridge machine. Now, with the Neo-Geo CD, SNK is promising both a wider variety of in-house software (a Zelda-style RPG, Krystalis, has been held back especially for the format), and greater thirdparty development.

→ according to plan, the Neo-Geo CD will start appearing in many independent shops - and possibly some of the larger multiples - from early November.

Edge has managed to obtain the only unit to have entered the UK even before the machine goes onsale in Japan at the end of October. In technical terms, the toploading unit is identical to the frontloader. The only differences are superficial: a flip-top lid replaces the motorised CD tray, and the build quality and overall design have been improved. Like the previous model, the new machine's CD drive is a single-speed type, chosen for reasons of cost. The original cartridge Neo



The limited-edition frontloading Neo-Geo CD sold out in Japan at launch

specs still apply, although the new machine now has a huge seven megabytes (56 megabits) of DRAM, 512K of VRAM and 64K of SRAM.

SNK will be pricing the new machine at the same level in Japan as the frontloader - ¥49,800 (£320), for the hardware only. According to Japanese sources, SNK makes no profit on the new hardware. Although the cost of the chipset has naturally decreased since its introduction, the continuing high cost of silicon on the international market means that the system's ample memory (the largest of any console by a huge margin) is a burden that couldn't be absorbed in its retail price.

SNK has had to make one major sacrifice to obtain the benefits of CD-ROM: speed. Neo-Geo CD games



New Generation is marketing two Neo-Geo CD packages. The more expensive bundle includes two joypads (above) and three games

are handicapped by lengthy loading times - given that some of the recent games approach 200 megabits, those 56 megabits of internal DRAM don't go very far. Most of the games Edge tested took around 30 seconds to load initially, with subsequent loading taking place when required. Some early, lower-memory games take even longer, because the whole game is loaded into RAM at the outset, requiring a 40-50-second stream of data at 150K/sec (although no further data access is needed once the game is installed in memory). While that's fine for catching up on classics like Magician Lord and Nam '75, '100 megashock' and soon even '200 megashock' games will result in even longer delays. Time to make a cup of tea, put some toast on, and watch an

episode of Brookside. Of course, this problem is not unique to the Neo-Geo CD, and in many ways the delays endured while waiting for games like Samurai Shodown and Fatal Fury 2 to load only serve to heighten the visual and sonic overload that follows. And many games (more than was first announced) will

feature re-recorded CD soundtracks. which not only saves on RAM (and therefore. reduces loading times) but, of course, means an

Who is it?

In 1975, this man made a decision with a friend that changed the face of computing. Longtime colleague of one of the richest men in the world, he assisted him in setting up one of the largest computing corporations ever

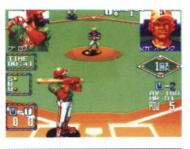


The new joypad (above) has a micro-switched directional control which works well. The rear of the machine features (from left to right) RGB SCART. S-Video, composite video and stereo jacks



it is...

Microsoft co-founder Paul Allen. Allen was instrumental in creating a version of BASIC that was used in the world's first microcomputer, the 8080 Altair. Microsoft was formed largely for the purpose of promoting this





Baseball Stars 2 (top) is an ordinary baseball game. SNK hasn't disguised the system's slow loading (above)

improvement in sound quality – if there's one thing Neo-Geo CD games can do, it's produce excellent sound.

Two hardware packs are expected to be made available in the UK: one consists of the machine, a joypad and Fatal Fury for £399; the other comprises the machine plus two joypads and three games (Fatal Fury, Super Sidekicks 2 and Last Resort) for £499. With SNK taking the traditional Japanese route of using the hardware as a loss leader, software sales are obviously crucial. UK games will start at £40, rising to £50 for newer titles, which alone makes the system an attractive proposition, given that many SNES and Mega Drive games are now weighing in at a hefty £60-70.



There are few shoot 'em ups on the Neo-Geo, but the quality of *R-Type* 'tribute' *Last Resort* makes up for it. The moody music is outstanding



The pinnacle of SNK beat 'em ups, the superb Samurai Shodown. The Neo-Geo CD version (complete with even better music) costs just £45

New Generation is well acquainted with the intricacies of the grey import market, so it's no surprise that the company will be handling both NTSC and PAL versions of the Neo-Geo CD. The NTSC machine can be played on most TVs with a SCART (21-pin) connector, which gives a clear, fullscreen picture. Happily, most titles will support a fullscreen PAL display, with only some of the older games running in letterbox format.

SNK is in the enviable position of having a machine that can immediately call upon a back-catalogue of impressive software. Non-beat 'em up fans may find its line-up fairly unappealing - 12 of the 25 initial UK releases are of the brawling variety but SNK's library of arcade games does include some truly memorable titles. While the loading times can be offputting, the sheer power of some Neo-Geo CD software makes the machine well worth considering. Anyone in doubt should check out Samurai Shodown after playing SFII or MKII on the SNES. It's like lunching at the Savoy after scoffing a Pot Noodle.

New Generation can be contacted on 061-652 3143 (trade enquiries only).

Size matters

The first Neo-Geo carts weighed in at a modest 46 megabits, while recent titles like Art Of Fighting 2 (178Mbits), and newies like The King Of Fighters '94 (196Mbits) and Samurai Shodown 2 (202Mbits) are rapidly approaching the system's 'max 330 mega' limit. Presumably, the '300 megashock' that will be emblazoned on future Neo carts is also something that potential buyers will be suffering from...



Older titles start at £40, while Samurai Shodown (left) costs just £45 and Super Sidekicks 2 is £50

Release dates

Early November

- Nam '75
- · Alpha Mission II
- Top Player's Golf
- Puzzled
- The Super Spy
- Burning Fight
- King Of The Monsters 2
- Art Of Fighting
 Fatal Fury 2
 - Top Hunter
 - Aero Fighters 2

· Last Resort

· Baseball Stars 2

· Football Frenzy

· Samurai Shodown

• Super Sidekicks 2

• King Of The Fighters '94

Late November

· Magician Lord

- World Heroes 2
- Thrash Rally
- Blue's Journey
- Ninja Commando

December

- Art Of Fighting 2
- Samurai Shodown 2
- January 1994

 Aggressors Of

Dark Combat

magazine December 1994

Excitement levels

surrounding the new 'VR' console from

Nintendo remain high

chiefly because the

company is playing its cards close to its

corporate chest.

This, surely, is for

stealing its ideas,

fear of competitors

and not, say, because

the platform is the biggest mistake in the

mpany's long, proud videogaming history.

VR32: a clearer picture emerges Nintendo's mythical 32bit

VR system is scheduled for worldwide shipout in April next year

ince its announcement in April, Nintendo's 32bit VR32 system has been the subject of much speculation, conjecture and general misunderstanding. In November, the company will dispel all preconceptions when it unveils the hardware at the Shoshinkai show in Tokyo on November 15, a full six months before it is expected to go onsale.

Pin-sharp details are still elusive,

but it is now believed that the VR32 will be a portable, battery-operated unit which accepts cartridges and is attached by a lead to a set of goggles. The display will be based on new projection technology developed by an American company; it's possible that it consists of a monochrome display (visions of a VR Game Boy spring to mind) which can be projected up to

three feet in front of the player as a stereographic image.

Although the identity of the US company has not been disclosed. some pundits believe that Nintendo has tied the knot with an unknown startup possessing proprietary

technology, However, Edge has learned of two established VR players that could be involved.

The first is Virtual IO. manufacturer of fully engineered HMDs that use 'non-immersive' technology - that is, it's possible to see around and through the HMD, which reduces the dangers of tripping over the dog, falling in the bath, etc. The only fly in the ointment is that a

possible conflict of interest exists: Virtual IO is developing an HMD for TCI's Sega Channel.

based (think about it) outfit called RPI, is known to hold some important VR patents. The technology has never been seen and the company is known to have been involved in negotiations with a major manufacturer.

Suggestions for the CPU have included 3D Labs' GLINT chip (see page 16) and NEC's V810 or V820 processor (more likely).

Nintendo had claimed that, as well as the VR32, Shoshinkai would be the venue for the unveiling of the Ultra 64. Now Edge has learned that only graphic demos will be shown, including glimpses of Mario and Zelda, Ultra-style. Still worth a trip.



Fortnightly Japanese magazine 'The Super Famicom' recently printed this artist's impression of the VR32. It's a reliable indication of what intendo has in mino





The Harumi International Trade Centre is where the VR32 will make its debut

Deep in its Kyoto HQ, Nintendo is working on what could be its next big success The second company, a Redmond-

prescreen



Sony's biggest
PlayStation supporter
in Japan, Namco is
gearing up to launch
a game each month
on the new platform,
beginning with Ridge
Racer. Though some
had previously
claimed that the
System 22 coin-op
conversion would be
absolutely arcade
perfect, it's become
clear that corners
have had to be cut.



EDGE

magazine

December

1994

Namco

Namco's console software development has traditionally slipstreamed its arcade technology. Now the company's support for the Sony PlayStation looks set to reverse the situation





Namco's Tokyo headquarters in Yaguchi, Ota-ku (left) features an information robot (right) that points visitors in the right direction

amco is destined to be a prolific source of software for Sony's PlayStation. A

deal signed with Sony allows the coin-op specialist to produce product for the home machine as well as develop arcade machines using the PlayStation technology.

With Sony's machine now entering the home straight, Edge visited Namco's HQ in Yaguchi, Ota-ku (20 minutes from downtown Tokyo) for a meeting with the R&D lab responsible for Ridge Racer and other PlayStation titles, and spent several hours quizzing five key staff (two of whom – Youchi Haraguchi and Noby Kasahara – were also interviewed in Edge 8).

When Edge was last at

Namco, the conversion of *Ridge*Racer was still deep in the planning stages. Six months later, there are just a few weeks to go before the game is scheduled to be finished.

'We've spent 80% of the necessary development time,' reveals **Shigeru Yokohama**,

general manager of the CG development department. 'The project manager keeps telling us it's not enough,' he adds, laughing.

Six months to convert a sophisticated arcade game to a brand-new system using embryonic development hardware is a formidable task. Namco has a core team of seven programmers and graphic artists working on *Ridge Racer* but is also relying on a number of planning staff to complete the project. Since shots of the 50%-complete version appeared in last month's **Edge**, some progress has been made.

'It's difficult to estimate just how complete the game is in percentage terms,' shrugs Shigeru. 'All aspects of the gameplay have been done and the graphics are now 70% complete. There are still small details to go in,

small details to go in, like the girls at the beginning of the race – they've still to be designed – but most things are finished.'

Although characteristically wary of giving away too much technical information about the conversion process – and the PlayStation's ability to replicate the coin-op – the *Ridge Racer* team were prepared to reveal some general details about the problems they encountered.

'The specifications of the two systems are entirely different,' states Shigeru. 'System 22 is used in the arcade version, and the PlayStation gives us less power to play with. The number of polygons onscreen caused us some problems, as did the PlayStation's CPU. There's also no anti-aliasing in the home version. We spent a lot of time refining the program on the PlayStation. As a result, it has ended up a lot bigger than the program code in the coin-op.'

Judging from the pictures on these pages, the programmers (who, unlike Sega's Daytona team, are not part of the arcade division) are experiencing some difficulties achieving the arcade version's level of detail. But the preliminary results are extremely impressive considering that they represent just six months' work. And what really matters is that the game looks fantastic in motion. Just as **Edge** was going to press, it attended an electronics show

'All aspects of the gameplay have been done and the graphics are now 70%

complete. There are still more details to go in, but most things are finished'

51

prescreen

where a demo of the game was playing and can testify that these screenshots fail to do justice to the quality of the action.

As indicated in Edge 14, PlayStation Ridge Racer will include extra features not found in the coin-op. One improvement will be the addition of two different viewpoints, giving the player a total choice of three - this will no doubt be welcomed by Virtua Racing devotees. A selection of 12 cars will also be incorporated in the console version.

All the standard arcade options will be retained, including automatic transmission, the time





trial route and the ability to travel the opposite way around the circuit. The soundtracks in the game have been ported straight over onto the PlayStation sound hardware, and Namco is currently designing a steering accessory for the console to mimic the arcade experience as faithfully as possible.

One issue which has been discussed at length at Namco is the PlayStation's link-up capacity. It has now been confirmed that a link-up facility won't make it into Ridge Racer. According to Mr Yokohama, 'Sony is a little bit behind on this particular aspect of development. We haven't seen the machine's link-up capabilities working yet, and we've no information about it. For this version of Ridge Racer, it won't be possible to play linked up.' This is a shame, but it's one deficiency that Namco will surely address with a new release of the game (and is likely to remedy in a conversion of Ridge Racer 2).

Namco is still committed to releasing Ridge Racer to coincide



Note the 'Rave War' legend on the car - a clever bit of marketing for Namco's upcoming game

with the arrival of the PlayStation. 'The exact launch date is still not confirmed,' section chief Noby say when the game will be released.' Presumably, there won't be too much sleep lost by the team in the unlikely event of the launch slipping to late December.

News that Namco will be pricing Ridge Racer at around

The graphics in Ridge Racer are 70% complete. Extra views (above and above left) should boost its appeal

Kasahara points out, 'so its hard to

given that a current wave of SFC software is hovering just under the ¥10,000 (£60) mark. Consumer sales manager Youchi Haraguchi explains that this is a direct result of Sony's lower licensing and manufacturing fees: 'With Nintendo, the higher-memory ROM boards cost between ¥2,500 (£16) and ¥3,000 (£19). With Sony, the cost of a single game CD is closer to ¥1,000 (£6), so we can take the same percentage profit on each unit but sell the game at a much lower price.'

¥6,000 (£35) is very encouraging,

No other versions of Ridge Racer are planned by Namco, although it's known that the company has a contract with Sega

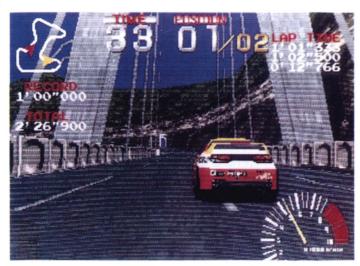


Noby Kasahara, Namco's section chief of international sales

EDGE

magazine December

1994



One of the most impressive parts of the arcade game: the bridge section. The detail on the cliffs in the PlayStation version is faithful to the original

for Saturn development (3DO software was on the cards but now looks dubious). 'We know the PlayStation well now and it's good hardware,' explains Shigeru. 'But we don't know the exact specifications of the Saturn yet, so it's difficult to say whether the game could be translated or not. Other new machines like the 3DO and 32X simply aren't powerful enough to do justice to the game.'

To the inevitable chagrin of the millions of loyal Japanese Super Famicom owners, the chances of a 16bit version appearing rate at about zero.

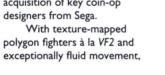
Another major

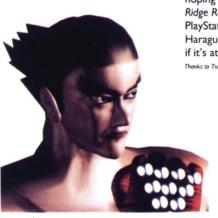
project currently being worked on at Namco is *Tekken*. Running on the new System II board co-developed by Namco and SCE. System, this beat 'em up is one of the most significant developments at Namco – System II is essentially a PlayStation chipset optimised for the arcade.

'It's not exactly the same hardware as the home system, admits Shigeru, 'but it's based on the same system, rather like the Titan board is based on the Saturn. Because the game has been written on the PlayStation, no conversion will be necessary — it can be ported straight over.'

It's thought that one of the original AM2 designers of Virtua

Fighter is playing a major role in Tekken, following Namco's recent acquisition of key coin-op designers from Sega.









Namco's other PlayStation projects include *Cyber Sled* (above right) and *Tekken* (characters, top), a superb texture-mapped *Virtua Fighter*-style beat 'em up debuting on the PlayStation coin-op hardware. New arcade arrival *Ace Driver* (above left) is another likely candidate for conversion



'With Sony, we can take the same

percentage profit

on each unit but sell the

game at a much lower price'

Youchi Haraguchi, consumer sales manager

Tekken wowed the crowds at the recent JAMMA show. No pictures have yet been released and Namco officials did their best to prevent photographs being taken, but Tekken is expected to appear sometime next year.

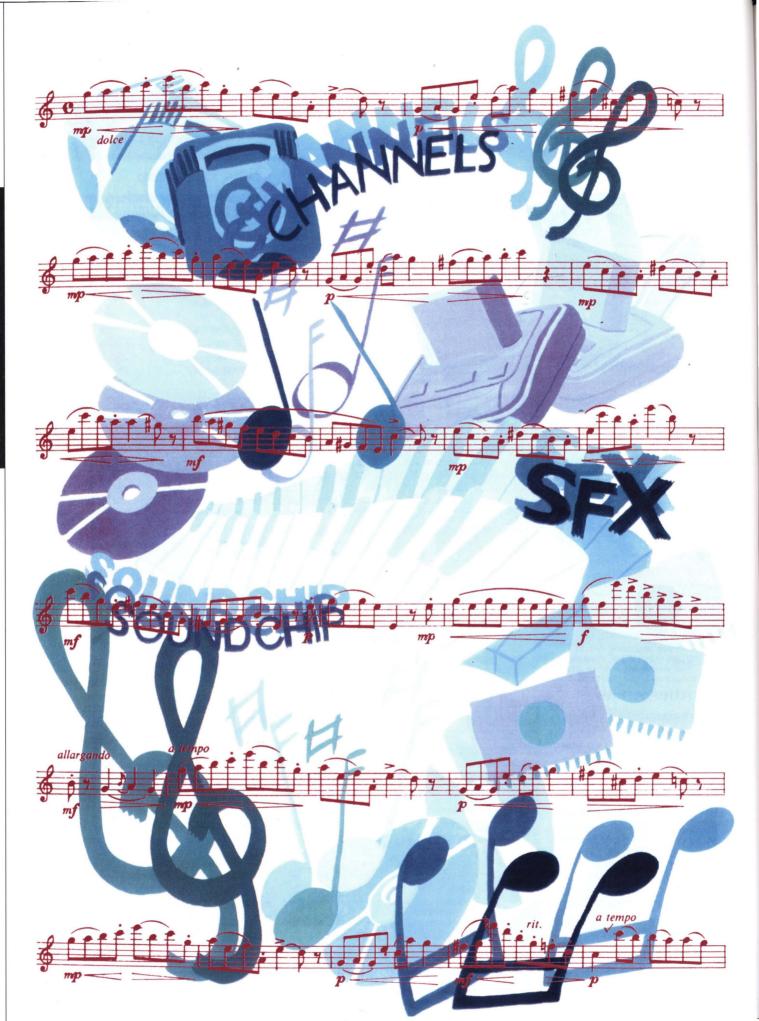
Cyber Sled, another
PlayStation conversion in the
works at Namco, is just 'one
month behind Ridge Racer'; it and
Starblade are scheduled for release
in December and January
respectively. 'We'd like to be able
to release one game a month for
the system,' states Youchi.

As for Ridge Racer, hopes at Namco remain high. 'We're hoping to sell one copy of Ridge Racer for every PlayStation sold,' Mr Haraguchi discloses. 'Well, if it's at all possible.'





Though they have received accolades for their craftsmanship with chip music, it's clear from this article that game musicians in 1994 want little more to do with hardware-generated tunes, preferring instead the lack of constraints offered by streaming CD audio. Chris Hülsbeck – in sensational specs – is a rare exception.







Making tracks



The noble art of game music



For many years, videogames have relied on music to add atmosphere. Edge explores the history of game music, from the first primitive beeps and squeaks to the sophistication of CD digital audio and new custom hardware

raphics tend to get all the glory in videogames. Game music is either disregarded completely or dismissed as irrelevant; how can it compete with Gouraud-shaded polygons and realtime rendering? But, as Gremlin's Patrick Phelan puts it, 'Music is an essential part of any computer game. Without it the game appears flat and without dimension.' And technological advances in the field of game music have been just as dramatic as those in the visual domain. Now, with the CD age upon us, music in videogames is set to change beyond all recognition.

In the beginning was the Spectrum. The redoubtable 8bit machine simply had a speaker that you could turn on and off. When the C64 appeared it was considered a great technical advance because its specially designed Sound Interface Device (SID) gave the musician three synthesised waveform voices (channels) to work with. Music was written either on a PC or straight into the machine itself in source

code, with the notes, their length and their volume typed in manually.

It was as much a technical exercise as a musical one. Veteran game-music maestro Tim Follin recalls, 'The music was secondary to the fact that you were making a sound that was original and trying not to make it sound completely crap.'

But for all its limitations, many musicians regard the era when they had to drive the C64's three-voice chip as the golden age of computer music. The music (described by one composer as 'plinkyplanky') was rudimentary, but there was a real sense of challenge involved. Writing the melody wasn't enough; you also had to write a sound driver routine to control the SID that would fit into the memory available - normally 3-5K.

'It was incredibly difficult,' remembers Chaos Engine composer Richard Joseph. 'We were doing it in source code all the time so you'd have to put a tune in and go make a cup of tea while it assembled. But it made it all very exciting. It was very limiting, but at the same time you could be very inventive if you put the time in.'

Charles Deenan, who started writing music straight into the C64 as one half of Maniacs Of Noise - responsible for over 300 C64 and Amiga titles - agrees: 'Some people writing now think they're really good with music, but they have all the synths and other things within their reach. With the C64 you only had three voices to work with and you really had to know what you were doing to make things sound good.' Many composers likened the SID to a musical instrument in its own right; you had to put the same time and the energy into learning how to 'play' it as you would with a piano or a guitar.

Theoretically, you could only ever get three notes at a time on the SID, but ways were soon found to push the chip beyond that spec. One of the common tricks was to assign short, arpeggiated notes to one voice and trigger them for 1/30th of a second, thereby fooling the human ear into thinking it was hearing more than one note simultaneously. And there were many other techniques. Sampled sound didn't really come into its own until the development of the Amiga's four-voice, 8bit soundchip (though a handful of C64 games like Deenan's Turbo Outrun actually managed to use it), so sampling chords to save voice polyphony was, strictly speaking,





out of bounds. What was possible, though, was realtime waveform shaping on the SID's square-wave voice (which, according to

Deenan, gives the sound more animation) or filling empty spaces between notes with echoes from other voices.

The plink-plank of a labouring C64 soundchip is still enough to bring a tear to many a time-served game composer's eye. Mindscape's Mark Knight, who wrote the music to Liberation, admits: 'I've got a program on the Amiga and the PC which emulates the C64 soundchip and I come in and think, "Shall I put a CD on? Nah, I'll listen to some Rob Hubbard"."

When the Amiga arrived, the strictures imposed by the SID were suddenly blown away. Music was able to expand into vast areas of memory (Mark Knight guesstimates that Liberation's music on the standard Amiga occupies 400K), with the only limitations being the desire of developers to release games on a single floppy. The Amiga also heralded the advent of sampling in game music, which meant that most composers moved on to using MIDI equipment.

'I personally still think that the Amiga is the most capable in the music department,' says Andrew Barnabas, who has created soundtracks for Global Gladiators, Aladdin and SWIV, among others. 'The music I've heard created on it seems to contain a certain discernable quality not found on the other platforms.' Maybe that's why the CD32 is still using basically the same chipset a good number of years after its introduction. Despite only having four channels, one of which was usually saved for SFX, the Amiga's sound processor was certainly the most successful of the 'middle generation' of soundchips.

The Amiga's console contemporaries are accorded rather less respect by musicians. The Mega Drive in particular, which relies on a 10-channel chip largely dependant on FM (Frequency Modulation), gets short shrift. 'Basically, the C64 sounded better,' sniffs Barnabas. 'Yuck' is Knight's opinion.

Knight's comment on the SNES soundchip is equally verbose. 'I don't like to talk about it,' he says. However, there are many people who would argue in favour of the SNES's Sony-designed sound processor. An eight-voice chip offering 16bit data-compressed sample playback, it has the potential for spectacular performance. But its problem is memory. The SNES only

has 64K set aside for music and SFX generous compared to the C64, but stingy in the extreme compared to the Amiga.

'Say I had to do a conversion of The Chaos Engine for the SNES,' says Richard Joseph. 'On the Amiga, every level had 250K. You have to squeeze that down into the SNES, which, okay, is a compressed 64K, but it's still only the equivalent of 100K.' Charles Deenan circumvented that problem by putting the note data and drivers in the normal 512K and restricting

'I still think the Amiga is the most capable in the music department. The music I've heard on it seems to contain a discernable quality not found -to it. Fine for conventional on the other platforms'

samples to the 64K, but most people didn't. Also, the BRR conversions from 16bit to 4bit samples were decompressed in realtime, which led to a noticeable reduction in quality.

Now the PlayStation and Saturn are looming. The Saturn contains a Yamahadesigned 16bit, 32-channel soundchip that is capable of emulating a conventional synthesiser costing £1,000. The PlayStation supports a 24-voice ADPCM chip sampling at 44.1 Hz (the industry standard for CD digital audio). Add to that the fact that both those machines, like most of the other CD platforms, all support Red Book digital audio and you've got sound potential as far removed from the C64's audio capabilities as texture-mapped polygons moving in realtime are from four-colour sprites.

If the introduction of the Amiga soundchip revolutionised game music, the - advent of Red Book CD digital audio capability in the games industry is turning it upside-down. Composers are no longer limited to having to drive soundchips; no longer must they restrict compositions to a certain number of channels. With CDDA, they can treat game music in the same way as any other type of music.

But CDDA is creating its own problems. The overriding issue is quality. The average consumer knows what a CD sounds like and has become used to a

> certain standard; anything that falls below that standard is going to be immediately pounced upon as inferior. TripMedia were near the completion of their Burn:Cycle project when they realised that the sound just wasn't up game platforms, perhaps, but not good enough for CD-based systems that are likely to be routed through

the buyer's hi-fi. The result was a lot of rerecording and remixing.

And that kind of thing is expensive. A small MIDI pre-production suite alone costs around £30,000, but now MIDI simply isn't enough. As Jason Clift from game music specialists Sonic Seduction points out: 'If you want CD-quality music in games, you have to treat it the same way as any other music you'd produce for a CD.' This basically means having access to a recording studio, something that gamehouses are unlikely to provide the capital for themselves. To achieve true CDDA, each channel needs to be separated, then treated and equalised individually. Hence, much of the final work on CD soundtracks nowadays gets farmed out for final mixing to companies like Sonic Seduction, who use studios containing £1 million's worth of equipment.

But, as Mark Knight points out, money is not the only thing at issue: 'I'd like to

Commodore 64

Given that the Commodore 64 first appeared at the end of 1982, its sound capabilities were truly remarkable. The revolutionary SID (Sound Interface Device) chip provided three channels of synthesised voices, with each voice transmitted in one of four types of waveform. The SID also had the benefit of programmable attack, delay, sustain and release (ADSR) parameters. During the course of its commercial life, the Commodore 64 arguably acquired a larger library of classic game soundtracks than any other machine.





convince Mindscape to get the equipment for me but then you still need the experience. You can sit somebody in front of hundreds of thousands of pounds of equipment, but unless they really know what they're doing they're not going to turn out brilliant results.'

Then there's the question of memory. Even with compression routines, there's a finite amount of storage space on a CD. Though it might seem ridiculously large compared to the capacity of older platforms, it must be remembered that CDDA takes up a lot more memory than a sound driver routine - one minute of 16bit stereo at 44.1Hz

Another obstacle is that the bandwidth of the CD is often taken up by the game's visuals. Graphics are the big selling point in games, and although it may be a simple accomplishment to trigger direct music playback off the CD, other data normally has priority. Charles Deenan has been forced to write chip music for Interplay's upcoming Stonekeep for the PC because the CD is constantly in use loading graphics into the machine in realtime. 'You're lucky to have CD-based soundtracks now,' says Mark Knight. 'Games are getting so complex that they need the CD for all the data, graphics or code they're trying to pull off them.'

eats up 11Mb.

Hence the revved-up tech specs of the next generation of soundchips. The hardware manufacturers are obviously pushing for them to be used, but the composers themselves are less sure. The majority of them are passionately committed to CDDA. 'Most of the time we'll probably choose to do CD audio,' confirms Charles Deenan, 'just so we

don't have to spend another two or three months redoing the music for another platform.' Currently, Deenan's favourite platform to work on is the 3DO, simply because the double-speed drive means that audio can be streamed off the CD most of the time. However, anything CD-based meets with his approval, because 'all the other things are getting to be a pain in the arse.' Richard Joseph is firmly in the same camp: 'I think everybody's looking forward to CDDA, to be honest, although we

'What we're doing now is CD, and if it goes backwards from that I'd rather leave the industry. I'd rather hear recorded music played at 20KHz than computer music'

won't know how practical it will be until people start working on it.'

Tim Follin expresses his preference more forcefully. 'Basically, what we're doing now is CD, and if it goes backwards from that I'd rather leave the industry. It doesn't matter when the alternative is to do computer music. I'd rather hear recorded music played at 20KHz than computer music. The whole idea of computer music was a silly one to begin with. These soundchips were invented for sound effect accompaniment to a game, that's all it was. It's a bit of a waste of time if you're doing music that's going to be covered by sound effects in some poxy little game.'

A major reason for the attraction of CDDA for game composers is that computer music, despite the advances in soundchip design, is perceived as being not what it used to be. The technology has certainly enhanced the music, but the extensive use of MIDI and sampling is

Commodore Amiga

The custom sound chip inside the Amiga is one of the most impressive features of the computer's original PAD architecture. The 'Paula' chip (as it was nicknamed by Commodore) has direct memory access and delivers four channels (two stereo pairs) of 8bit PCM, with nine octaves of amplitude and frequency modulation. But by far the best feature is its ability to play sampled voices and instruments at different pitches, with impressive results. The Amiga's library includes some of the best game soundtracks ever written.



Tim Follin, composer and programmer of a myriad of game soundtracks, is one of the industry's greatest talents

Tim Follin

Ithough only 24, Tim Follin has carved himself an enviable position in the videogame industry. An accomplished player of the guitar, piano and violin, his career started with freelance work in the mid-'80s. This was followed by a job with Software Creations, which then occupied a cramped office above a computer shop in central Manchester.

At the time, the company was porting a range of Capcom coin-ops to home computer formats. Tim created a range of truly outstanding soundtracks for its conversions of games such as Bionic Commandos, LED Storm and Ghouls 'n' Ghosts (arguably his finest hour, putting Capcom's SNES tunes to shame) for computers including the Spectrum, C64 and, later, Amiga.

Tim stayed with Software Creations until about a year ago, having composed and programmed acclaimed soundtracks for Solstice (NES), Target Renegade (NES) Spider-Man And The X-Men (SNES), Equinox (SNES) notable for its ethereal, haunting music - and the fabulously upbeat Plok! (SNES) He later found time to create a range of widely regarded rock tunes for Interplay's Rock 'n' Roll Racing, also on the SNES.

Tim currently works for Malibu Interactive in Warrington, producing audio CD soundtracks for the Mega CD. 'I never want to write chipgenerated music again if I can help it,' he says with feeling. 'To be honest, I really don't see my future in the games industry - I want to get into making films.

Fans of his music will be hoping he changes his mind. If he achieves his aim, the videogames industry will lose one of its greatest talents.





Charles Deenan is audio director at Interplay US, but he started writing game music with Maniacs Of Noise

Charles Deenan, Interplay

ack in 1986, a Dutch duo called Maniacs Of Noise set up a company to create music and effects for the Commodore 64. Co-director Charles Deenan was just 16 when he decided to team up with friend and musician Jeroen Tel, and the pair went on to create some of the most memorable soundtracks heard on the C64 and Amiga.

'It kind of started as a joke,' recalls Charles. 'Essentially, I was a programmer doing drivers and sound effects at first. After the first few games, for which Jeroen did the music, I tried to do some music as well. I'd have to say that the first few attempts were pretty horrific.' Hewson obviously didn't think so; the publisher of accomplished 8bit games like Stormlord I & II, Cybernoid I & II and Zamzara, which pushed the C64's sound chip to its limits, made much use of the Maniacs' talents. Companies like Probe Dinamic, Digital Design and System 3 also employed the Maniacs for many of their games, and by the time they had progressed to the Amiga in the early '90s they had written music for more than 300 computer games.

Charles moved to the US in 1991 to join Interplay, and he now heads their seven-strong audio department in Irvine, California. Among the games he's created music for are Out Of This World, The Lost Vikings, Castles II and the very long-awaited Stonekeep (Edge 1). 'It's kinda funny to see where game production has gone during the last four years,' he reflects. 'My main tools used to be a C64 and a copy of Turbo-assembler. Now we're using studios with about \$200,000 worth of audio equipment.

widely regarded as masking a lack of musical talent. 'Samples make things sound absolutely brilliant, even if hardly any work was put

towards it in the first place,' says Barnabas. It's a rather Luddite attitude in many respects - similar to the purist revisionism that the music industry went through at the dawn of techno - but one which acknowledges a significant factor in the decline of computer music as an artform -

'It's all about money these days. If music for a game would take three months, the developers will say, "Let's find someone else". And actually an integral part of that's kind of pissing me off'

the feeling now is that 'anyone can do it'.

The widespread use of, and, to an extent, reliance on, MIDI and sampling became necessary as companies released more games on more platforms. The result was that music simply became the finishing touch on an incredibly fast production line. Admittedly, some of the early composers like Hubbard could churn out great music at a spectacular rate of knots, but production lines aren't actually renowned as being conducive to creativity and individuality. 'It's all a matter of money these days,' opines Deenan. 'If music for a game would take three months, the developers will say, "Let's find someone else", even if that person was really good. And that's kind of pissing me off."

This situation has understandably resulted in a great deal of cynicism among game composers, disenchanted with game music being regarded as a 'bolt-on extra at the end', in the words of Sonic Seduction's Dan Parker. Many composers never even see the game they're writing for until it's close to completion. Andrew Barnabas relates a story of just being handed a list of titles for tunes for a table on Pinball Dreams II, a copy of the first game and nothing else. 'I couldn't even see what the game looked like,' he complains. 'It was like composing in the dark.'

CDDA is seen by composers as the catalyst to improve their professional circumstances. Things are changing already, as software houses commit themselves to

> larger projects and release fewer games. Often the musician is still only bought in during the final stages, but some are now being consulted from the start.

Budgets are rising too, as it's realised that music is games. Even for games destined for more conventional media, film

composers are starting to be commissioned, or the inhouse one is starting to emulate that cinematic style more closely. Sound is finally gaining the status it should have had from the start. 'Music is a fundamental part of the very essence and atmosphere of the game,' asserts Dan Parker. 'Now that there's much more capability there, the whole position of music will change.'

Game composers now

have the opportunity to produce music that is indistinguishable from that in films. The complexity and the potential of the new technology at their disposal is enormous; no longer are they constrained by the abilities of a particular soundchip. But technology is only one half of the equation; creativity is equally, if not more, important. And, sound quality aside, will game music really be any better in the CD age than it was on the C64?

SNES

Anyone who's ever heard SNES classics like Castlevania IV and Equinox won't be surprised to learn that the machine has some powerful sound hardware. Its Sonydesigned 16bit sound chip delivers eight channels of stereo PCM (pulse code modulation) and offers an adjustable sampling rate of between 6 and 48KHz. The chip also has hardware-assisted effects like digital echo, although Equinox is one game that uses echo effects created in software to save memory the SNES's 64K sound RAM is its biggest drawback.



For the record



Nomis Studios, as used by Sonic Seduction (Paul Weller recorded Wild Wood here)

s far as sound reproduction is concerned, there's no argument about the fact that CDDA is superior to chip-generated music. New games hardware may have multiple voices, but compared to a CDDA track produced, say, in the 64-track Nomis Studios used by Sonic Seduction, it's lightweight.

Sound drivers contain basic information on what instruments should be used, what note is to be played, for

how long and at what volume. A recording studio, however, splits the soundtrack into its component parts and assigns each one a separate channel on a mixing desk, through which it can be individually treated and controlled, before the music is mixed back down to two-track stereo.

The important thing is to ensure that instruments with similar frequency ranges don't clash in the same sonic space. Every channel on the mixing desk has a fader and equaliser: the fader controls the volume, while the equaliser governs the level of any chosen frequency. For example, a bass drum and a bass guitar occupy similar frequencies, so the sound engineer can decide to cut the bottom end and boost the top end of one of the instruments and do the reverse with the other. He must set the volume, the equalisation and the position of that sound in the stereo span before it can be recorded to tape.

MIDI is far less adaptable; keyboards often only have a stereo output so sounds can't be separated.

Sonic Seduction can be contacted on 081-830 6263. Fax: 0273 400455

Banding together



Alien Sex Fiend were responsible for the ambient soundtrack heard in *Inferno*

he big trend in game music at the moment is to rock bands. *Inferno* comes courtesy of a soundtrack by Alien Sex Fiend; Acclaim's *Maximum*Carnage features Green Jelly; *Microcosm* has Rick Wakeman; and EA's 3DO Road Rash thrashes along to music from Therapy? and Soundgarden, among others.

Although such manoeuvres provide a nice opportunity for reciprocal promotion, the logic of depending on narrowly defined musical genres is questionable. A soundtrack pivoting around alternative metal might increase sales to that sector of the market but is just as likely to alienate other, much larger, sectors.

Another problem is money. In a

recent issue of Making Music magazine, Renegade's **Graham Boxhall** stated: 'We get a lot of interest from bands but they misunderstand the commercial aspects. We've had approaches from well-known bands like Utah Saints and The Shamen, but it wouldn't be profitable for us.'

The potential for multimedia abuse of copyright is enormous. Mark Isherwood, general licensing controller of the Mechanical Copyright Protection Society, which distributes royalties to artists, has warned that reducing the royalty rate for CD-ROM music from the audio one (8.5%) could lead to a 'longterm erosion of income' for musicians. After two years of negotiations, the MCPS still has 'major problems to overcome' before it can realise its aim of introducing a courtenforceable Standard Licensing Scheme.

Rock music in videogames is still a novelty. Currently, events seem to be mirroring the film industry; Charles Deenan has hired an undisclosed 'big name artist' for an intro sequence, and Burn:Cycle's score will be available as a conventional audio CD. But how long the music industry – not exactly known for being profit-shy – will tolerate the games industry's traditionally low fees is open to question.



German musician Chris Hülsbeck has established himself as one of the world's best game composers

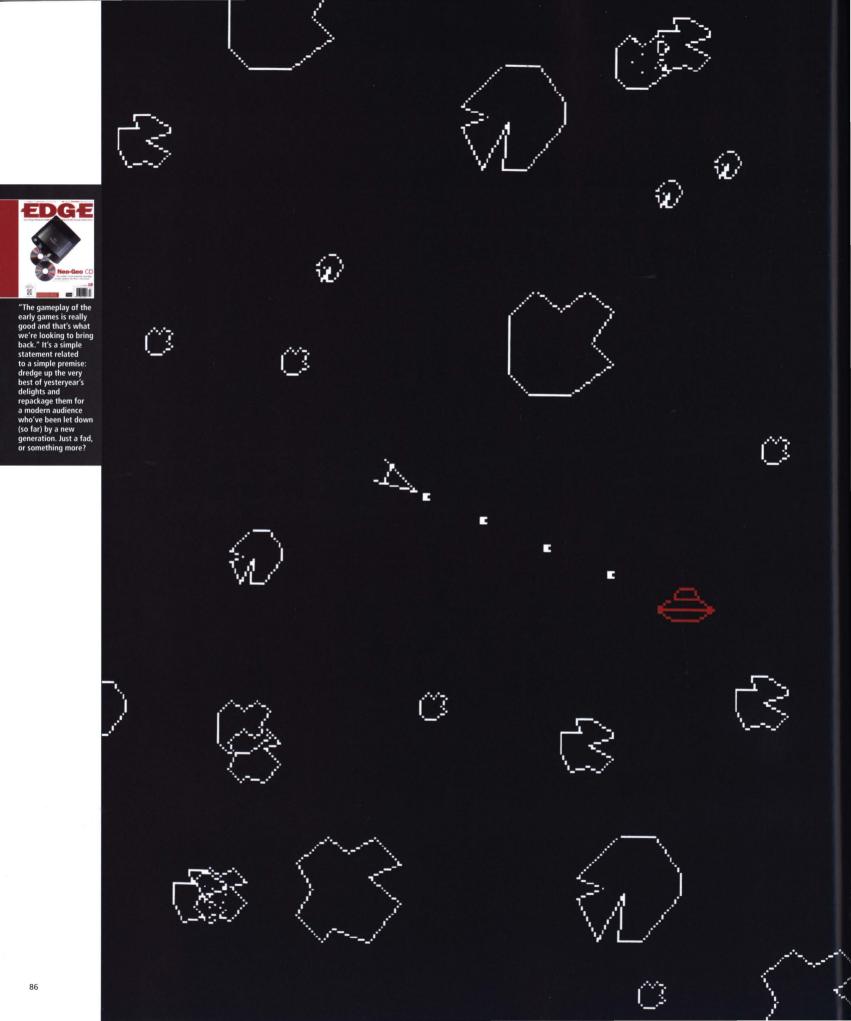
Chris Hülsbeck

hris Hülsbeck is another veteran C64 soundtracker turned professional game musician. Aged 26, he now works in Langen, Germany, for Kaiko, a company which is probably best known for the excellent Amiga shoot 'em up Apidya, although his energetic soundtracks for Factor 5's Turrican games are among his most accomplished work.

Chris' career started at the age of 14 when he entered a music competition in a German games magazine and managed to take first prize with a piece entitled Shades. This was good enough to land him a job at Düsseldorf-based Rainbow Arts (now called Softgold), where he produced the music for many games, including canned Mario clone *The Great Giana Sisters* (C64 and Amiga), *X-Out* (Amiga), *Jinx* (Amiga), *R-Type* (Amiga) and *Z-Out* (Amiga).

Chris will soon be writing music for the Sony PlayStation – and, encouragingly, will be programming it on the machine instead of just streaming digital audio. 'The PlayStation has extremely good sound hardware,' he claims. 'There are similarities to the SNES but you've got 512K sound RAM, and there are 24 voices and a reverb processor to play around with. I guess you're looking at about £1,200's worth of audio equipment on the PlayStation board.'

In Germany, Chris has released audio CDs of his music, many of which are superb. His latest, *Rainbows*, is a compilation of reworked older music from Rainbow Arts games. For ordering details, call Kaiko on 010 49 6103 52365, or fax them on 010 49 06103 24816.











Revival

of the

With developers increasingly inspired by the past. more and more old games are staging comebacks. Edge finds that things are what they used to be



Id games are back. Retro gaming is in. The technology-obsessed videogames industry, which has always tended to look towards the

future, is now returning to its roots.

The year is 1979, lan Dury, Gary Numan and Buggles top the charts. Apocalypse Now, Alien, and Kramer Vs Kramer are packing them in at the local fleapit. Not The Nine O'Clock News is the funniest thing on TV. Mrs Thatcher is

elected. And Space Invaders and Pac-Man are the future of interactive entertainment.

15 years later, all these things are consigned to the history books. All, that is, except Space Invaders and Pac-Man. Games like these now form part of a games revival that has begun to made its presence felt on all formats over the last year.

The pick of the born-again games is Jeff Minter's Tempest 2000. Released for the laguar to universal acclaim earlier this year, Tempest 2000 not only excited fans of the original but also won new adherents. It has

Retrogaming

since become the best-selling Jag cart by a wide margin, shifting one-and-a-half times more copies than its nearest rival.

Tempest 2000 is likely to be the first of many revamps on the Jaguar. 'There are an awful lot of classic games that have been surpassed graphically but not in terms of gameplay,' explains Atari's Darryl Still. 'A lot of the games on the new formats are definitely lacking in gameplay.

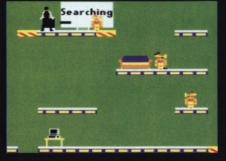
Jeff Minter is already at work on a laguar version of Defender, and Atari has announced conversions of Battlezone and Star Raiders, both of which are being developed in-house, with more classics promised. 'We're making games for the millennium,' soundbites Darryl Still, alluding to the '2000' suffix tagged onto all Atari's revisited titles.

But it's not just the Jaguar that is exhuming the past. Taito has released a faithful SFC conversion of the original Space Invaders - even reproducing the banding effect of the strips of plastic that 'coloured' the ranks of Invaders on later editions of the coin-op cabinet. At almost half the price of normal SFC carts, it has notched up respectable sales in Japan.

Even the PC is getting in on the act: the shareware programs VGASPEC and C64EMU are, respectively, Sinclair Spectrum and Commodore 64 emulators that can run a large library of (illegal) versions of old Speccy and C64 games, including Manic Miner, Atic Atac, Paradroid and Pitstop.

So why the sudden interest in old games? And what does it tell us about the games market today?

'Often people look at the graphics and sound and miss the fun elements of the





but it's surprising how many people it

Early games had very limited graphics,

screen's worth of tiny sprites

on a blank background. There

were no new levels, no bigger

enemies, no cut-scenes; the

rewards they offered were

points and, of course, the

pleasure of playing the game

itself. It's this simplicity that

originals or not. The gameplay

defined by a number of basic

appeals to today's gamers,

whether they played the

in these early games was

usually consisting of no more than a single

strikes a chord with.

The C64's Impossible Mission (left) was a breakthrough platformer for home computers. Microprose's recent *Impossible Mission 2025* for the Amiga (right) is a pale imitation

game,' reckons Janine Johnson of Activision. The American company is happy to dust off its back catalogue and has already released an FMV-intensive

'Often people look at the graphics and sound and miss the fun elements of the game. The gameplay of the early games is really good, and that's what

we're looking to bring back'

Janine Johnson, Activision

CD-ROM revival of the Zork series. consisting of the disappointing Return To Zork, and Pitfall: The Mayan Adventure, a new version of David Crane's pioneering platformer. (A new SNES incarnation of River Raid was also developed but cancelled after a poor reception at CES.) 'The gameplay of the early games is really good and that's what we're looking to bring back,' explains Johnson.

'They don't

make them like they used to' is the catch-all statement that's always trotted out whenever old games are discussed. It is a generalisation, of course,

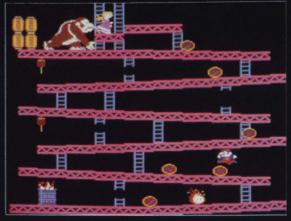


Donkey Kong (left) was not only Nintendo's first successful arcade machine but is also the first

parameters; within this framework the player was given complete freedom. The best of today's games rely on the same philosophy - Sensible Soccer, Doom and Street Fighter II all use relatively few building blocks to create a comparatively open gaming environment, putting the emphasis on the player's actions rather than a preset series of events. The result is that they're not linear experiences - a complaint levelled at all too many modern games.

And for all their unsophistication, early arcade games were remarkably challenging. Defender was extremely basic, both graphically and conceptually, but it remains one of the most difficult games to play, let alone play well. Asteroids was another game that demanded great skill from the player, especially when your ship's thrust and inertia were brought into play.

Nik Wild, project manager at Psygnosis, believes that 'games based on reactions and dexterity will come back, but not until everyone's finished showing off all the things their new machines can do with FMV and sampled sound and CD storage and whatever.' From Shadow Of The Beast to Microcosm, Psygnosis itself has done a fair amount of showing off, but it also has versions of Damocles and Tir Na Nog in



66

Retrogaming









The original Pitfall (left) on the Atari 2600 VCS. The game went on to sell over seven million copies worldwide on different formats, a figure that the new Pitfall (right) can only dream of

development for PC CD-ROM, plus Dropzone for the SNES.

There's no disputing the fact that reviving a previously successful title makes

sound commercial sense. If the game is a straight port across to a new format then all the work's done, creatively at least. And if it's a product that has a strong track record, that's so much less work for the marketing department. 'We sold seven million copies of Pitfall on all its formats, remembers Janine Johnson. She will no doubt be hoping that as many as a tenth of

those who bought the original will fork out for Activision's new Pitfall game.

'There are six, eight years' worth of gamesplayers who are discovering these

games for the first time,' says Darryl Still. There are thousands of people playing Tempest 2000 who don't realise that the game they're playing is essentially over 10

'Atari's past glories are based on a very strong reputation for producing very strong games. I don't think

they'll never look back'

years old.' Asked why Namco released new versions of Pac-Man, Namco UK's Kevin Yanagihara replies: 'There's still a big demand for the Pac-Man game in the US

The Jeff Minter-programmed Jaguar game, Tempest 2000, proved what the purists already knew: despite being 10 years old, Tempest is one of the most intense videogames experiences ever

and that's why we developed it for the NES and Game Boy. Pac-Man was released 15 years ago and some of the people who played it are now 30 or 40 years old and have children. They'll buy it for their children and to play it again themselves.'

More cynical folk than Edge

might say that the release of old games simply allows developers to avoid creating original products. 'Isn't it just that people have got new formats to put old games on and make more money without doing much more work?' suggests Nik Wild.

Not surprisingly, software companies are quick to refute allegations that they're just trying to make a fast buck. 'It's been really expensive,' claims Johnson. 'Return To Zork cost over \$2,000,000 and it's not

> inexpensive to get Sound Deluxe Labs' (the Oscarwinning sound designers for JFK who produced Pitfall's sonics).

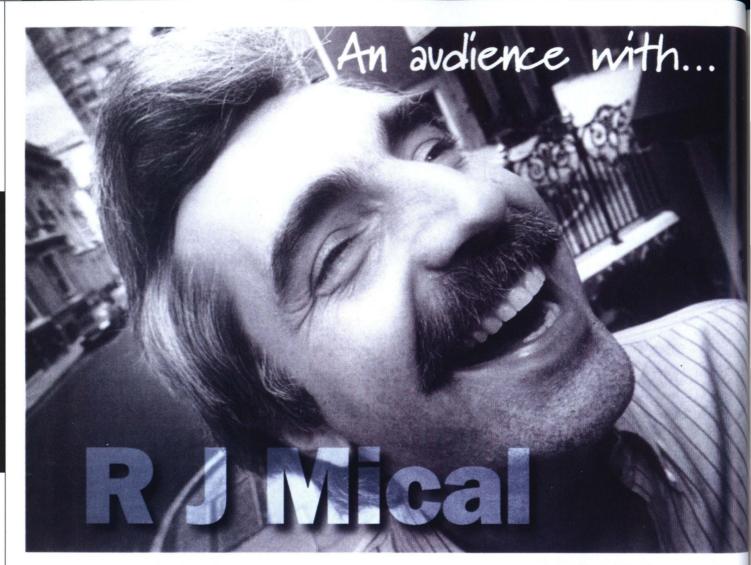
'The games still have to be developed from scratch, the same as any other one,' argues Darryl Still. 'We can't port code from the arcade machine into a Jaguar and just fill in the polygons. We had to start over.' He strongly defends Atari's raiding of its back

catalogue: 'Atari's past glories are based on a very strong reputation for producing very good games,' he maintains. 'I don't think anybody can ever draw a line and say they'll never look back. We went back and learned from what we did."

Of course, behind the desire for 'pure' gameplay - and the desire of companies to make money - lurks something that few can bring themselves to acknowledge: nostalgia. The Space Invaders generation, having graduated to 'home computers' in the early '80s, kept the flame burning until the Sega and Nintendo console boom came (and went). Now, faced with a stale 16bit market and no clear direction for the future, some are looking back to more innocent, less complex times.

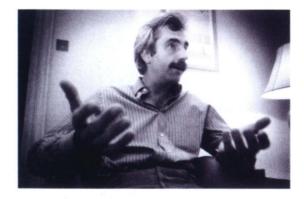
This new wave of old games is about more than nostalgia, though. New - and, in some cases, outstanding - games are being produced that ape classic titles. The reason developers are casting an eye over their illustrious pasts could be that they've finally realised that graphics maketh not the game, and that what people want is not 'interactive movies' but videogames. The renewed interest in the past shows that gameplay is still what counts. But then, didn't we know that all along?

...........



Atari's Lynx and the 3DO platform, RJ Mical's batting average isn't bad. Certainly it's given him confidence enough to dismiss other 32bit consoles, predict a very good Christmas for 3DO, and play down the role of polygons in the grand scheme of game graphics.

R J Mical was a guiding force behind the Amiga, the Lynx and the 3DO. **Edge** greets one of the games industry's true originals



he magnificently
mustachioed R J Mical
has been creating
computers since most of
us were gawping at digital
watches. Not all of his

creations saw the light of day, but the ones that did became central to the home computer entertainment revolution. R J started his career at Williams Electronics in Chicago before teaming up with hardware designer Dave Needle to produce the original Amiga 1000. The pair then went on to create a state-of-the-art handheld games machine that ultimately surfaced as the Atari Lynx. Since 1990, his talents have been directed towards a single end: the 3DO. R J is vice-president and Fellow of The 3DO Company and was responsible for developing the 3DO's operating system software and Cinematic Software Tools.

Edge met R J in the pastel paradise of the St James Club in London, where he discoursed on 3DO, Atari, Zen and mad-dog Englishmen.

Edge What's the story behind the creation of the 3DO?

R J Mical My partner, Dave Needle, and I, with Dave Morse, had this company called

EDGE

magazine December

1994

New Technologies that was founded to create a bunch of cool technology - some small things, a few medium-sized projects and one or two major projects. At the time we thought it would be fun to do something really powerful. The machine that was successful out there then was the Genesis and we thought we'd make something ten times better than the Genesis. We weren't really into it for the money. We were into it for the opportunity to do that stuff because it's just so cool. Fortunately for us, our success over the years was enough to keep us in business while we were working on this, the system that ended up turning into the 3DO. We did the Amiga originally and then we did the Lynx. The Amiga was a good piece of technology and so was the Lynx, but both of these machines suffered from a lack of public awareness.

Edge Do you feel that Atari let you down over the Lynx?

R J At the time it was a superior piece of technology. They had a lot of problems due to their history as a company and the relationships they have maintained and squandered with software developers and hardware suppliers. We didn't believe it had a chance of surviving when it was sold

to Atari. Sadly for us, and sadly for a lot of people, it turned out to be true.

Edge So you feel some empathy with the designer of the Jaguar, then?

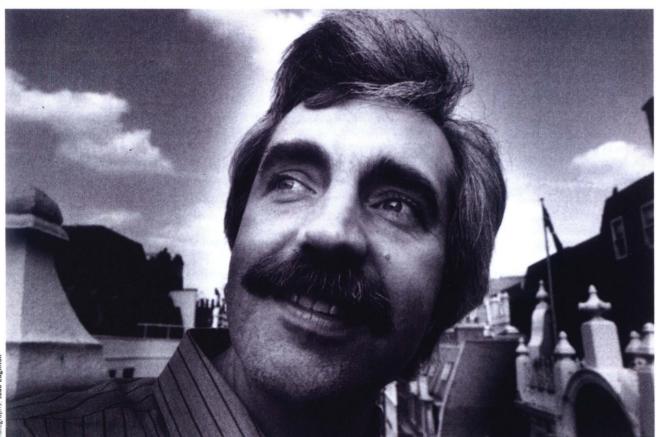
R J Well, we resisted as much as we could having the thing go to Atari and when we were unsuccessful we resigned from the .We didn't believe company where we created it, a company called Epyx. The day after we chance of surviving the Lynx had a resigned, the three of us, Dave Needle, Dave Morse and I, when it was sold to Atari. Sadly for us, it got together for lunch to figure out what turned out to be true we were going to do next and we decided on what projects we wanted to work on, including what eventually became the 3DO. Though the Amiga had only limited success [in the US], it was recognised as a real nice piece of technology that just wasn't sold well. Likewise the Lynx. So the third time we started walking around saying, 'We've got this great idea for a system', people were enthusiastic and were willing to front us the money to bring it to fruition.

Edge When did Trip enter the picture?

R J We were visited one day by a venture capitalist, Dean Hovey, who saw the prototypes of the 3DO we had put together and was extremely excited by it. He told us he had been with Trip the evening before and Trip [then

president of EA] had been expressing great frustration at the rigmarole of having two, three dozen platforms out there to develop for and was saying he wanted to invent a new standard in the industry and a brand-new technology. Then we'd have one system

that we'd all believe in and everyone would be happy. The consumers would be happy, there wouldn't be the confusion, they'd get the very best, we'd support it and push it to be the best, and we'd all win. It would be a big win all the way round. The only problem Trip had is that he didn't have the technology yet. But after a dance of NDAs we got together with Trip and by the end of that afternoon we had an understanding of the kind of company we might try and form together.



inde Edelaton

interview

Edge This is at the end of 1990. Was autumn 1993 always the target for the launch, or did you have problems?

R I We originally figured on a little bit earlier, but as we brought in more partners they had their own desires which had to be satisfied. Time Warner wanted it to be good at working with movies as they had an interest in the cable market. AT&T wanted it to have a powerful operating system able to handle telecommunications. So the schedule kept slipping.

Edge That must have been frustrating given that your putative competitors were also busy at work?

more difficult to do if you don't, but that's just one part of a good games system. You have to have excellent audio processing and a system that can do animated characters well. But we do have a very nice polygon engine in the 3DO and we haven't yet seen what developers will be able to do when they get really comfortable with it. Edge Has any game released so far lived up to your ambitions for the machine?

R J Road Rash. Its blend of 3D horsepower and 2D character animation made for a rich experience. It's doubtful that some of these new polygon systems coming out are going to be able to do that very well.



Even with 3DO M2 is on the way, R J believes that the current machine can survive on its own





R J Mical professes not to be concerned about the Saturn and PlayStation

R J For the business people, yes. But the technology people were delighted because that's what we love to do most - to extract what the thing is destined to be, not what we originally set down on paper. Edge Are there any features that you're particularly pleased with?

R J I'm very delighted with the overall graphics processing capabilities. We wanted to have something that would make you sit back and say, 'Woah, this is television!' We wanted to put together an engine that would push pixels around very conveniently, have high rendering rates and produce natural, real-world effects.

Edge The 3DO has been criticised for its comparatively modest polygon rendering rate. Is this a real deficiency or do you think the polygon experience is overrated?

R J I think it is an overrated thing. There are a lot of applications that you can do if you have a huge amount of polygon rendering horsepower behind you that are Edge How can you be so sure? Their specs look mighty impressive.

R I At the moment I'm not really concerned about them.

Edge Do you have any thoughts about why consumers, especially in the USA, have resisted 3DO's attraction?

R I I understand that it's doing so much better in the States now that the people there are no longer concerned about it. Everyone's very happy. It looks like this Christmas is going to be very good for us. Edge Assuming that

becomes one of the companies that joins the 300 family. would advise them to let the CDigo this is the case. and given that Trip Hawkins is quoted as saying, 'We don't need a next-generation product until there's much more pressure in the marketplace', we were surprised to hear about Bulldog/M2. What can you tell us about it?

R J Well, now, let's see. Bulldog... Something that bites your ankle and needs a crowbar to get it off... We are thinking about an upgrade for the existing machine that will add a bunch of extra capabilities. Edge What, specifically, can we expect to see in this add-on?

R I Well, nothing's decided yet. I agree with Trip: there's no big pressure yet to do anything. 3DO's on top. We've got a machine now. We're selling tons of them now. We're selling incredible amounts of software per piece of hardware. These other machines, if and when they ever come out, are going to have a long startup period struggling to establish themselves, just as we did. We will have to address them at some point but we don't have any sense of urgency.

Edge You've recently announced Sanyo as a hardware licensee. Is there anyone else waiting in the wings?

R J I hope that Philips becomes one of the companies that joins the 3DO family and does a 3DO system, at least for the European market. They don't have to let the CD-i go, although that's what I would advise them to do. I'd really like to see it happen. The CD-i was an extremely good machine when it was first launched but, like the Amiga, it's many years old now and it's time for the next steps to be taken. I think that a way for Philips to continue to keep its presence in the marketplace would be to join us, and it would be to 3DO's benefit to have a company as great as Philips as one of our manufacturers.

Edge Are you ever surprised by what your machines can do? Do coders break through what you thought were the technical limits?

R J Absolutely. I was with a programmer from Elite recently and he was showing me an effect on the 3DO that was just amazing. It's an extremely complicated idea that took a long time for him to explain to me, but it was fantastic, because it was the first instance I've seen where an engineer Thope that Philips has reached beyond our logic into the hidden logic that's there in the system

waiting to be discovered - the underlying Zen.

Edge You mentioned Elite. Do you find British programmers particularly ingenious?

R J In general I think they are. UK and Germany. If you look at the stuff on the Amiga, by far the coolest hacks of all came out of the UK and Germany. These mad-dog programmers who live, breathe,

eat and drink this stuff. I would hire each one of them to join my company if I could because I want those kind of passionate, crazy, wild-haired, wild-eyed fanatics who care about doing superb things. And that's what 3DO is really all about.





How to create a cover image that represents a PC adventure game and an in-depth look at Sega's new console? Issue 16 shows one way of doing it. The Saturn story itself reveals a company obsessed by its Sonybadge competitor console, and aiming for a 70 per cent share of the next-gen hardware market.



In January 1993, Sega announced the development of a 32bit console that would take videogames into a bright new era. For a while, it looked as if the future belonged to Sega.

But it wasn't quite as simple as that...



Now the Saturn has arrived. This month the machine reaches
Japanese shops at the end of its gruelling journey from
conception to hard plastic. Was it all worth it?

Edge looks at what Sega has achieved

Tech Specs

2 x SH-2 32bit CPU @ 28MHz

- VRAM: 12Mbits
- Main RAM: 16Mbits
- Sound RAM: 512K
- Buffer RAM: 512K
- Boot ROM: 512K
- Battery RAM: 32K

Graphics

- Resolution: 352 x 224
- 640 x 224
- · Colours: 24bit palette, 32,000 onscreen

- · Sprites/polygons: VDP1 chip, dual frame buffer
- Backgrounds: VDP2 chip; 5 planes, 2 rotation planes

Sound

- 16bit 68EC000 processor @ 11.3MHz
- Yamaha FH1 processor
- FM, PCM, 44.1KHz sampling frequency, 32 voices
- DSP 128 steps/44KHz

Data storage

- · Double-speed CD-ROM drive
- Cartridge slot

t wasn't supposed to happen. The possibility that its next-gen hardware would

face competition simply hadn't figured in Sega's calculations. So when news broke in November 1993 that Sony was developing a videogames system capable of revolutionary performance, all hell broke loose. Those who had seen the machine working claimed that it was far more powerful than anything Sega had planned. Most

Sega Saturn



threatening was the disclosure that it was to be released in late 1994 - the

same time as the Saturn. To Sega's dismay, a powerful new rival had arisen overnight.

Sega's president, the feared Hayao Nakayama, was among the first to be informed. His reaction was typical. He immediately marched down to his consumer research and development division and proceeded to ridicule the sum of his team's achievements over the previous year. For Sega to be beaten by Sony in the videogames arena (an area in which Sony had little previous experience) was unforgivable.

The shock the Sony revelation caused to Sega can't be overstated. 'There had been rumours,' recalls one Japanese Sega employee, 'but Sony's announcement took a lot of people by surprise. It wasn't just the technology that worried people; it was the fact that Sony was planning to enter a market that Sega thought it would have completely to itself.'

Sega's kneejerk reaction was to delay its Saturn development programme by a few months to incorporate a new video processor into the system. Not only would this boost its 2D abilities considerably (something that Sony's machine was less proficient at); but it would also provide better texture mapping for 3D graphics.

Unfortunately, this played havoc with the Saturn's carefully



Sega's Tokyo consumer HQ in Ohta-ku is where the Saturn was conceived, and where Edge tested the hardware and software





Saturn's rear (above) includes a recess for a lithium battery (far left), a communication link, and RGB/video-out







The Saturn joypads (top) are similar to Mega Drive pads, but with L and R buttons included

worked-out schedule, to the extent that many pundits thought that Sega wouldn't make it to the market in 1994. Some people even expected the company to cancel the Saturn and concentrate its efforts on something more powerful for 1996.

One prominent developer who visited Sega Of Japan's Saturn division told Edge: 'There's simply no way that Sega will be releasing the Saturn this year. They're behind on the hardware, behind on the software, and it's very hard to see how they can do it.'

But, contrary to expectations, Sega has done it. The reality is that its 32bit machine has now been launched in Japan, and the same system is on its way to the US and UK later next year.

It was originally planned that the Saturn would be released in two forms: a CD-ROM-based machine; and a cartridge-only console, developed under the project name Jupiter. Compatibility between Saturn and lupiter was to be achieved by means of a plug-in CD-ROM drive containing extra RAM. However, Sega anticipated that it would be problematic trying to sell higher-price, inferior versions of the same games that were

available on CD-ROM. The solution was to scrap Jupiter, and this is exactly what happened just a few months later. It was decided at this point that Saturn would be a CD-ROM console (the CD-ROM drive was to be developed by JVC), but with a cartridge slot for expansion or data saving.

At around the same time, Sega made another important decision. It recognised that its most valuable market was the United States, and that it had to retain the enormous userbase it had built up with the Genesis. The answer was the Mars project, which resulted in the system we now know as the 32X.

Essentially, Jupiter became Mars, but whereas there had been a degree of compatibility between the Saturn and the Jupiter, it was decided that Mars would be a completely standalone system. Although the 32X and Saturn contain the same CPUs (but running slower in the 32X) the architecture was never designed to be compatible. And according

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The launch of Saturn in

Japan is Sega's most important hardware release ever. Even though the company is placating its (admittedly minimal) Mega Drive installed base with the 32X (called Super 32X in Japan), which appears on Japanese shelves just a two weeks after the Saturn launch, Saturn is by far the main event. Whether the Japanese will take to the 32X isn't known, but demand for the Saturn is high, even surpassing the momentum that has been building up for the PlayStation launch.

Sega, which has always been sidelined in the Japanese consumer market, is now in a make-or-break situation with the Saturn. The company can't afford a reprise of the set-back it suffered in the early 1990s when the Mega Drive lost out to the SFC, and it admits that the next few months will be tough in the Japanese market.

'Sega is terrified of what Sony is doing,' revealed one Japanese source. 'They brought the machine forward by a week to try and screw Sony, and the fact that *Virtua Fighter* is the only game worth buying for the machine doesn't seem to concern them. In the first week they're counting on the game to shift several hundred thousand units.'

Sega has announced that it plans to ship 500,000 units before Christmas. By this time next year, the company hopes to have sold two million Saturns.

Saturn's marketing budget is rumoured to be huge, and a



Sega is staging a huge marketing campaign for the Saturn launch in Japan (funded by an equally massive budget). As well as heavy TV promotion, ads such as this have appeared in most Japanese games mags

massive campaign is running on Japanese TV right up to the launch.

'We have to do this because of the PlayStation,' said an anxious PR manager. 'We have to reach a 70% share of the next-generation hardware market. 'If we don't get at least 50% of the market share, we think that thirdparty development will be slow. Thirdparties will not want to develop for a machine that has less than this level of penetration.'

SOJ's PR department has been working overtime during the Saturn launch period. Its efforts to boost Sega's profile within the Japanese gaming fraternity have focused on getting extensive coverage for the development of important titles like Virtua Fighter and Daytona USA. A myriad of Japanese games magazines have

closely followed the Saturn conversion of

Virtua Fighter since its debut at the Tokyo Toy Show (the version shown there was only two weeks into development) and its designer, AM2 head Yu Suzuki,

'We have to reach a 70%

share of the next-generation

hardware market. If we don't

get at least 50%, thirdparty

development will be slow'

has now attained almost star-like status among Japanese gamesplayers.

Opening the doors to the media in this way has proved to be a shrewd move for Sega. It has

given the company new credibility in Japan by showing that it isn't afraid to reveal the more intimate details of its preparations for Saturn. Japanese games companies are traditionally reticent about discussing technical issues with the



Sega's marketing department needed to take on extra staff earlier this year to kickstart the Saturn hype machine. It seems to have worked



Anyone hoping to spot one of these in Dixons before Christmas needn't bother. The UK Saturn isn't due until late '95





Some of the first Saturn accessories include the Shuttle Mouse (left, ¥3,000), joystick (centre, no price yet), and the Multi Terminal 6 (right, ¥3,800), which allows up to seven people to play simultaneously. An SRAM cart is also planned



press, so Sega's new approach is like a breath of fresh air to people used to

fighting the obsessive secrecy of organisations like Nintendo. It's just the latest change in a company that is keen to internationalise itself. Anyone who has visited Sega in Japan will appreciate this — Japanese Sega officials will shake Westerners' hands, whereas a courteous bow will win you more fayour at Nintendo.

'Sega makes the world's best

coin-ops and is offering a way

to bring them into the home.

The best thing Sega has is

confidence in its brand'

Sega's decision to license the Saturn technology was a strategic coup which bodes well for sales of the machine. In a move aping 3DO's open technology policy, Sega has licensed the Saturn hardware to three main Saturn development partners: Victor (JVC), Hitachi and Yamaha. All

JVC's V-Saturn is the first licensed machine from Sega's hardware partners. But will Sega's licensing policy pose a threat to 3DO?

three companies have Saturn-compatible machines in the pipeline, with Victor's V-Saturn machine (set to appear some time after the Sega version) apparently packing some new features.

In another 3DO-style ploy,
Sega is using Hitachi to handle a
large part of Saturn's distribution
in Japan. Hitachi will make the
Saturn available through its chain
of home electrical shops (which
means that Sega doesn't have to
rely solely on game stores) via a
distribution company called
Hitachi Mediaforce. This brings the
number of retail outlets carrying
the machine up to about 7000
and provides Sega with
the broad sales
platform it needs.

But, of course, Hitachi's link with the Saturn project goes much deeper. In 1993, the Japanese electronics company set up a joint venture with Sega to develop a CPU for the Saturn based on proprietary Hitachi technology. Several Hitachi staff were seconded to Sega's Saturn division (it's now believed that the same team is now working on preliminary 64bit technology for Sega), and the result was the SH-2 - or the 'SuperH RISC Engine', according to the logo emblazoned on the chip.

The SH-2 is a small (2cm square) but fast RISC chip that has been designed primarily to process graphics. Like all RISC processors, it's more streamlined than conventional CISC-based chips and can carry out instructions in far fewer clock cycles.

According to the chief Hitachi technician who perfected the chip, 'The SH-2 has a high calculation

efficiency. For magnifying, reducing and rotating 2D and 3D graphics, it's very fast. Apart from workstations, no chip can change coordinates as quickly.'

The question of the

Saturn's technical ability is the most controversial aspect of the entire saga. Ever since the machine's Sony-induced revamp, the Saturn has had more than its fair share of teething problems. Only recently were development systems updated to the point where they could be called 'final'.

Originally, the Saturn was

supposed to have one main CPU, but it was specced up to include another when tests revealed that a single chip was too slow. And the system control unit, or SCU – one of the main components of the Saturn architecture – has been subject to

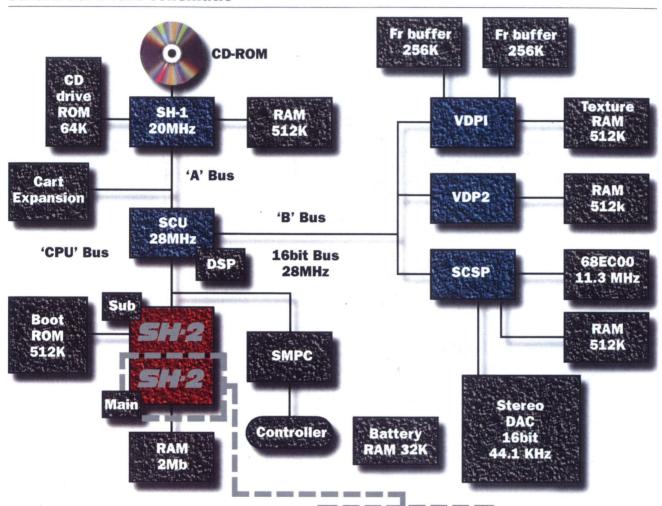
The CPUs aside, the Saturn architecture is processor-intensive. As well as the twin SH-2s, there are five independent processors, including a sprite chip (VDP1), a background chip (VDP2) and – the pièce de resistance – a 16bit custom soundboard designed by Yamaha.

continual change.

'Saturn's sound hardware is phenomenal,' one developer told **Edge**. 'It's way, way better than the PlayStation's sound – you can basically plug a synthesiser straight in and play it through MIDI.'

Like Sony's PlayStation, the Saturn 'cheats' by using a sprite engine to generate its polygons. Rather than creating true, depth-buffered polygons, the VDPI maps sprites to geometry,

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he Saturn's architecture is divided into a number of distinct components, represented by the above diagram. A detailed internal layout of the SH2 chips is shown opposite. As well as these twin CPUs, several other important chips are crucial to the Saturn's performance.

- **1. VDP1** Sprite processor. Because of the way the machine handles 3D, not only does this chip calculate all of the sprites, but it also maps sprites onto geometry. It relies on a dual frame buffer that handles rotation and pulls data from a 512K texture RAM cache.
- 2. VDP2 Background processor. This can generate up to five simultaneous backgrounds, and can also rotate two playfields (ala the SNES' Mode 7). It's possible to have three normal scrolls at the same time as a field of rotation.
- **3. SCSP** This is the Saturn's formidable sound processor. Easily the most potent piece of hardware inside the machine, it boasts 32 voices, FM synthesis, PCM synthesis, and two CPU interfaces. It uses a 16bit 68EC000 and a Yamaha FH1 processor for an overall frequency of 22.58MHz. Other features include built-in DMA for file transfer, a 16 channel digital mixer and a 128-step digital signal processor.
- **4. RAM** The Saturn's memory is split between a CD-ROM buffer, the VDP1 & 2 chips, and the SCSP. The total memory, at 4.5Mb, is the highest of any console (bar the Neo-Geo CD).
- **5. Boot ROM** A massive 512K is taken up with the system's ROM. The Saturn allows different languages to be selected and a music CD option even allows the vocals to be removed from CD tracks.





he SH-2 is only 2cm square, but it includes many different facets. This is a breakdown of the Hitachi chip.

1. CPU core The centre of the CPU. Each SH-2 runs at 25 MIPS (2,500,000 instructions/sec) and has other functions besides the normal features of a RISC chip.

3. Bus state controller Interface to connect the CPUs directly to RAM. The SH-2 can exchange data with

SRAM and DRAM directly, which reduces wait times.

- 2. Controller Checks to see if any of the joypad buttons are being pressed.
 4. CPU interface The SH-2's 'window' to the rest of the Saturn
- hardware. Enables the chip to communicate with the other components.
- **5. Cache address array and controller** The SH-2's 4K RAM cache holds data in an address array. The address controller manages the cache.
- 6. Division Calculates co-ordinates and processes information.
- **7. Multiplication** Calculates co-ordinates and processes information, but in this case is managed by the CPU core.
- 8. Cache data array 4K of internal RAM to speed up processing.

Sega Saturn

4

which is much less demanding of processing power. In a game like

AM2's Virtua Fighter, the characters are actually constructed from hundreds of mapped sprites. (The PlayStation works in a similar way, but has a geometry engine that can process more polygons.)

The upshot is that Saturn is an exceptional 2D powerhouse. For arcade-perfect conversions of traditional bitmapped 2D games, it's in a class of its own. It delivers a huge number of scaled and rotated sprites, and can also shift up to five independent backgrounds (with two separate rotation fields also available).

Saturn's 2D power is confirmed by software developers. 'It's a very nice machine,' believes one. 'For conventional 2D arcade games it's awesome.'

With 3D graphics stealing the limelight in the arcades, it's odd to discover that Sega's emphasis

performance can be traced back to its arcade division. The success of arcade games like

Virtua Racing led to a belief within the company that it had amassed more experience of games technology than any other videogames manufacturer. US president Tom Kalinske hinted as much back in mid-1993 when he revealed the existence of the Saturn project.

But the projected overlap between Saturn and Sega's Model I technology - as used in Virtua Fighter and Virtua Racing - proved to be optimistic. As with most Sega technology, Model I was basically an expensive assortment of bought-in chips. Its main CPU, an NEC V60 running at just 16MHz, was simply too slow for the Saturn. And the bulk of Virtua Racing's number crunching was handled by four serial DSPs that were way too costly to be included in any home system. Sega's consequent development of the SH-2 meant that it could also



AM2's Yu Suzuki believes that Sega should follow Sony's approach to attracting thirdwparty developers

produce a Saturn-compatible arcade system.

The development of the ST-V (Titan) board has provided Sega with a dual-purpose coin-op platform. Firstly, it is intended as a low-cost arcade system, in direct contrast to expensive dedicated units like the Model 2-powered Virtua Fighter 2. It offers acceptable 3D performance but is primarily a powerful 2D engine, most suited to handling the latest beat 'em ups and sprite-based action games. Sega hopes that the low price will encourage its widespread use throughout the arcade industry as a multi-purpose arcade system.

But ST-V is also a testing ground for future Saturn games. The system is based on the Saturn chipset, with the main technical differences being the use of silicon instead of CD-ROM as a storage medium (the relationship between the two systems is similar to the one between the cartridge-based Neo-Geo and the Neo-Geo CD) and the capacity for upgraded graphics performance.

Sega currently has ten games in the pipeline for the ST-V, including AM2's Golden Axe: The Duel, and Tantoaru, a puzzle game from AMI. But enthusiasm for ST-V within Sega isn't high. Says Yu Suzuki: 'I think it will be hard to develop good software for the ST-V. It's not that I think the hardware is bad, but personally, I've got more interest in high-end machines. Because of the low price, though, ST-V will be Sega's new flagship hardware for the coin-op market.'

Flagship or not, ST-V is emerging as the Ford Escort of the coin-op market – affordable, yet



Sega's amusement division has played an important role in the development of the Saturn

unremarkable. It will be interesting to see how it fairs against Sega's Model 2 Ferraris.

Given that Saturn's success hinges on the translation of games like Virtua Fighter, AM2 is the lynchpin of Sega's software policy. The work undertaken by Yu Suzuki and his AM2 team over the past six months has been as much a learning curve for them as it will be for other Saturn developers.

'We couldn't port software from the Model I hardware to the Saturn,' explains Virtua Fighter project leader **Keishi Okayasu**.





Sega's first Saturn-compatible ST-V titles include Golden Axe: The Duel (top) and Title Fight 2 (above)

Titan) has the same basic spec as Saturn but takes games on plug-in ROM cartridges

The ST-V arcade board

(codenamed

Sega Saturn

'The V60 and the SH2 [SuperH] are entirely different chips. The original code needed a lot of work to make it run.'

It seems that the biggest headache for the team has been coping with the twin central processors and maximising the machine's power to display as many polygons as possible. Both SH-2 chips in the Saturn run at 28MHz (whereas in the 32X version they run at 23MHz). Although the combined capacity of both chips is 56 MIPS, they don't run in true parallel. The CPUs have a problem accessing main RAM at the same time - one chip has to wait for the other, and this slows down the overall performance considerably (although the problem can be minimised by using a RAM cache).

'Trying to program two CPUs has its problems,' admits Yu Suzuki. 'Virtua Fighter uses a different CPU for calculating each character. The two CPUs start at the same time but there's a delay when one has to wait for the other to catch up. One very fast central processor would be preferable. I don't think all programmers have the ability to program two CPUs - most can only get about one-and-a-half times the speed that you get from one SH-2. I think that only one in 100 programmers are good





AM2's Daytona USA moves surprisingly smoothly, despite being only 20-30% complete

enough to get this kind of speed out of the Saturn.'

Programming in assembly (the chip's own language) is the only way to get fast results. However, the Japanese traditionally use *C*, which leads to a significant drop in performance. In assembly it's possible to achieve a two- to fivefold speed increase over *C*, and some developers hold *C* in such contempt that they maintain that assembly is actually more than 20 times faster.

Sega's in-house development of titles like Virtua Fighter has spearheaded the push to get the best results out of the Saturn. 'In AM2 we use C for the first few steps and then assembly after that,' says Yu Suzuki. 'We managed to get the twin CPUs running at about 1.8 times the speed of a single chip – that would have been impossible using C.'

The results, of course,

speak for themselves: Saturn Virtua Fighter is fast and smooth, and although the polygon count is slightly lower than it is in the arcade, it's a faithful conversion.

And that's good news for Saturn. Sega's arcade pedigree is the machine's greatest asset. The fact that the entire initial batch of Saturns has been pre-booked by Japanese gamers can be directly attributed to the *Virtua Fighter* factor, and if Sega manages to convince more gamers that acquiring a Saturn means buying into an established coin-op hit factory, the machine could do very well indeed.

Ultimately, there are many people who will put loyalty to Sega and confidence in the company's confirmed gameplay expertise before any of the machine's perceived technical limitations.

Shiny Entertainment's **Dave Perry** is one such devotee: 'I am a Sega man at heart,' he says. 'I'm behind Sega all the way. Sega makes the world's best arcade machines and is offering a way to bring them into the home. The best thing Sega has is the confidence in its brand. *Daytona USA* is on the way. I placed my order a month ago...'



The jewel in Sega's crown (in the eyes of Japanese gamers, at least) is AM2's excellent conversion of Virtua Fighter

Release Schedule

November 22 1994	
Virtua Fighter (¥8800)	Sega
Mahjong Goku (¥5800)	Shanor
Tama (¥5800)	Time Warner Interactive
Wanchai Connection (¥7800)	Sega
December 1994	
Chinese Detective	Sega
Goal Racer (¥6800)	
Clockwork Knight (¥4800)	
Gotha	Sega
Myst	Sunsoft
February 1995	
Great Wall Of China	Sunsoft
Gamesmaster	
Hissatsu Pachinko Collection	
Cotton 2	Success
Quo Vadis	Gramus
Zero Four Champ Special	Media Ring
1995	
Race Drivin'	Time Warner Interactive
New Legend Of Shinobi	Sega
Pebble Beach Golf Links	Sega
Greatest 9	Sega
Masters (provisional title)	Sega
Deadlus	Sega
Virtua Hang On	Sega
Rampo	Sega
Victory Goal	Sega
Van Battle	Sega
Dynamic Fantasy (provisional title)	
Blue Seed	Sega
Magic Knight Ray Earth	
Basketball Saturn (provisional title)	
Daytona USA	Sega
Gail Racer (provisional title)	Sega
Virtua Tennis (provisional title)	Sega
Ice Hockey (provisional title)	Sega
Panzer Dragoon	Sega
Tomcat Alley Saturn (provisional title)	Sega
Sim City 2000	Sega
Ecco The Dolphin Saturn (provisional title	e)Sega
Fantasy Earth (provisional title)	Sega
League Road Saga (provisional title)	Sega
Side Pocket (provisional title)	Sega
Overdrive	Zoom
Overdrive4D Boxing (provisional title)	Victor
Hardcore	Virgin
The 11th Hour/The 7th Guest	Virgin

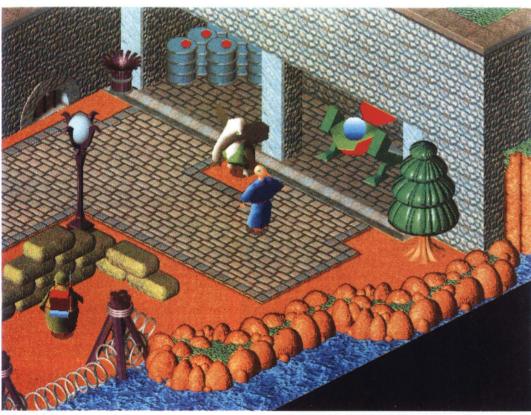


Edge reviews don't often open with a full-page promotional 3D render, but Little Big Adventure isn't a run-of-the-mill game. For one thing, it introduces a quirky control method by which you can set lead character Twinsen's movement to one of four states, including 'discreet', which facilitates stealthy gameplay.



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Little Big Adventure



Format: PC CD-ROM

Publisher: Electronic Arts

Developer: 'Adeline **Price:** £45

Release: November 18 (UK)

or a game supposedly set in a make-believe world world, with made-up creatures and far-fetched situations, parts of *Little Big Adventure* are disturbingly real. There's a scene at the beginning of the game where you, as the humanoid Twinsen, make your escape from the asylum where you're imprisoned. You kick one of the doctors in the face and, as he reels back, punch him viciously in the abdomen. He collapses to the floor at your feet, clutching his stomach in agony, until you kick him once more in the head and he dies. You've got to



Little Big Adventure marks a triumphant return to the isometric PC adventure genre, combined with the compelling gameplay of a console game like $\it Zelda$

testscreen





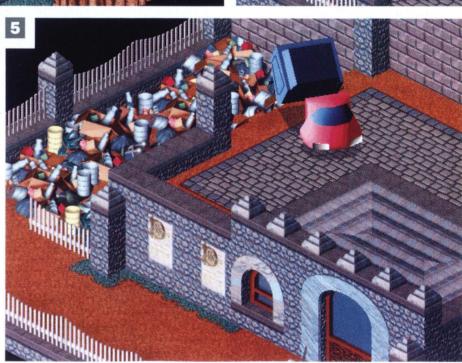


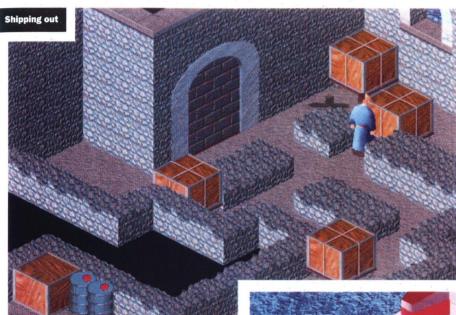


What a dump

You make progress in *LBA* through a combination of problem solving and exploration. To escape from the prison where you're incarcerated at the beginning of the game, a little lateral thinking is required. **1.** Sneaking behind a guard house, you notice a rubbish truck going about its business.

- 2. Selecting 'discreet' mode, you bury yourself in the mound of refuse and wait. 3. The truck approaches. 4. You jump in and it carries you off, giving you time to sit back and watch the realtime light-sourced polygons for a while.
- **5.** When the truck reaches the tip, you're unceremoniously dumped (with the backing of some outstandingly realistic sound effects) along with the rest of the rubbish. Now you're free, but your quest is just beginning...







Arrange these crates in the warehouse and the elephant in charge gives you a ferry ticket

do it because it's the only way to get the key to the exit, and if you'd let him go he'd have raised the alarm. But it looks gruesome.

And it's all down to the astonishing animation which French developers Adeline (a company which includes many of the programmers of *Alone In The Dark*) have managed to accomplish. By using SVGA Gouraud-shaded polygons rather than pre-stored sprites for the characters, they've produced animation as smooth and true to life as anything previously seen on the PC.

And this achievement is all the more impressive when you look at the detail of each character – not just physical features like eyes, hair and clothing, but the way they move, crouching down, recoiling when hit, shouldering their rifles and peering around suspiciously. In a way, it's a shame when the rather more conventional rendered video footage cuts in.

The animation, then, is state of the art. The scenery, too, is fabulously detailed and 'solid', thanks to the use of *3D Studio*-rendered SVGA backdrops. There's also realtime zooming at the press of a function key – amazingly, the screen scrolls around smoothly in normal VGA to provide close-ups of the action.

The sound is equally outstanding. As you might expect with a 16bit card, *LBA* offers great music, endless sampled speech and a huge array of superb effects. Walking on grass, stone and wood all produce their own distinctive noises, and generally nothing happens in the game without an original and convincing aural accompaniment.



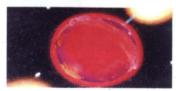
After a stomach-churning sea journey (top right) you arrive on terra firma (above). When the ship's captain has bid you farewell, you continue the hunt for your missing girlfriend

But what's also interesting is the game's setting. We're all familiar with oppressive. totalitarian states where the gun rules and there's steam rising from every grating in the pavement. But LBA takes a fresher perspective. The world it's set in actually looks like quite a pleasant place, with parks to walk in, well-tended flower beds, clean beaches and good street lighting. It's only recently that things have gone wrong (the plot tells of an evil doctor who's taken over the world with the help of genetically engineered clones) and soldiers have appeared on the streets. There are sandbags piled up on every street corner, clones peering out from behind barbed wire, and although some citizens glance around





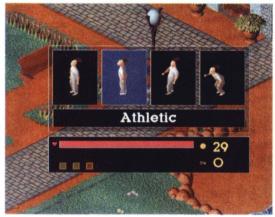




A stylish pre-rendered intro reveals the threat facing Twinsen's home world. LBA's imaginative plot is one of the game's main strengths



Twinsen explores underground for items to help him with his quest (top). The inventory screen shows what objects you're holding (above). Choosing the right mode for the situation is a large part of LBA's challenge (right)



them nervously, most seem unaware of the net that is slowly closing in on them.

Controlling Twinsen seems a little odd at first – you use the cursor keys to rotate him and move him forwards and backwards, rather like driving a car. But it soon becomes natural. He's got four 'gears', too: normal (for walking around and collecting things); athletic (for running and jumping); aggressive (for fighting); and discreet (for sneaking about). The animation is different for each mode.

It quickly becomes apparent that the year and a half Adeline have spent putting *LBA* together hasn't been entirely devoted to making it look nice. One minute you're fighting your way past a group of guards, the next you're sneaking through a secret passageway, shuffling crates around in a 3D sliding block puzzle, or picking your way through a treacherous jumping section. *LBA* combines

the best elements of computer games like *Alone In The Dark* and *Flashback* with the intricacies of console adventures like *Zelda* and *Landstalker*.

There are irritations. It seems rather harsh that if you bump into a wall while in athletic mode you lose some energy. And sometimes the screen flip-scrolls to reveal that you've just blundered into the path of a robot.

But you can forgive *LBA* anything. With well over 40 hours of playing time and something new apparently around every corner, it's both huge and absorbing. Rarely does a game arrive that combines technical innovation with diverse gameplay, humour and genuine personality. *Little Big Adventure* is quite unlike anything else.

Edge rating:

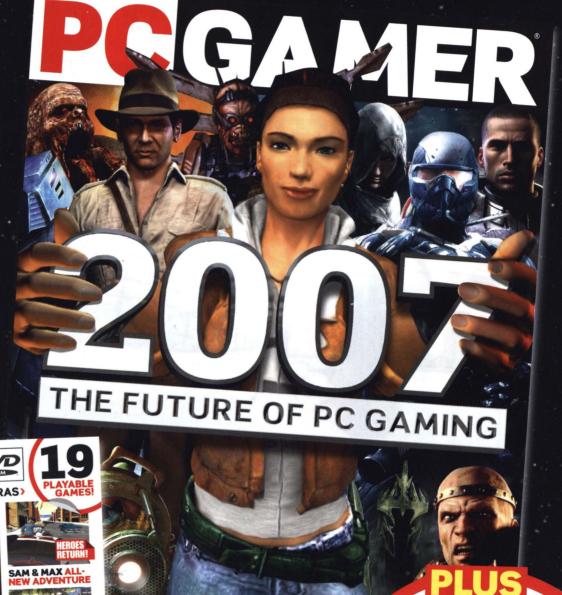
Nine out of ten

MASSIVE PREVIEW SPECTACULAR



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- The Burning Crusade
- Lord of the Rings Online
- Stalker
- Half-Life 2 Episode 2
- > Hellgate London
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-) C&C 3
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SECOND SEX LIFE

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testscreen

Burn: Cycle

EDG-E

Proof that, even if it doesn't necessarily have a future, the interactive movie will have a legacy featuring at least ouccessful example, Burn:Cycle takes the well-worn cyberpunk motif and somehow makes it work, while also presenting probably the only fat bloke covered in sparkly gold paint quaning will ever see.

Format: CD-i

Publisher: Philips

Developer: TripMedia

Price: £45

Release: Out now (UK)



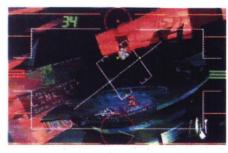
The video in *Burn:Cycle* blends seemlessly with the puzzles. An interrogation at gunpoint provides you with information (above). This Buddha figure (left) explains your next task

ver since the CD was thrust upon unsuspecting programmers two years ago, debate has raged in the games industry about whether it will prove to be a benefit or a hindrance. One camp accuses the silver disc of being a gameplay killer, while others argue that its huge storage capacity offers limitless potential. Phillips' CD-i system has itself borne the brunt of much of the criticism aimed at CD as a games medium, with titles like *The Seventh Guest* held up as proof of CD's limitations.

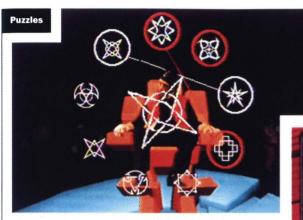
At first sight, TripMedia's latest project, Burn:Cycle, looks like providing further ammunition for CD's (and CD-i's) detractors. On the surface, it's yet another ill-conceived attempt at an 'interactive movie', with sumptuous visuals, orchestral sound, an intricate plot and professional actors but, one suspects, little gameplay.

However, as anyone who plays it will discover, *Burn:Cycle* is different. Its immersive gameworld, genuinely dramatic gameplay and extraordinary attention to detail from start to finish make it arguably the first real success in the campaign to bring Hollywood production techniques to videogames.

The game casts you as Sol Cutter, a freelance hacker who becomes infected with a military-grade virus (the 'Burn:Cycle' of the title) during an information trawl. You have exactly two hours to neutralise it before it turns your brain to pig fodder. To succeed, you have to overcome the amnesia which is a side effect of the Burn:Cycle and uncover the motive for your attempted assassination. This is a pretty hackneyed plot by any self-respecting cyberpunk's standards, but what keeps you enthralled is the way it's executed.



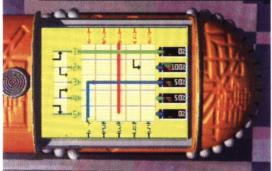
Burn:Cycle does contain some arcade gameplay. Here you have to destroy mines launched by the SoftTech Corporation at your airborne car













Puzzles

The puzzles in *Burn:Cycle* range from the challenging to the incredibly obscure. This level of difficulty means that they never become repetitive, even when, like the Psychic Roulette game, you have to play them more than once. The puzzlesolving is made even more intense by the game's time limit.

Consequences of failure include decapitation, detonation of the Burn:Cycle, loss of your arms or just profound frustration.

If you win at Psychic Roulette (top) you get a prize. The Lock Breaker (above) is time consuming. The Sound Tree (top right) is one of the hardest puzzles

Burn:Cycle stands out because of its wonderfully realised environment – each location on the map is beautifully pre-rendered. Although this means that you don't have complete freedom to explore, the epic scale of the scenery ensures that you never feel caged (which is where Myst went wrong). Although the picture degrades briefly when you're moving between areas (the resolution sharpens when you reach your destination to reveal all the detail in the scene), the pixelation is somehow completely in keeping with the game's atmosphere.

As well as those sections of the game over which you have control (the vast majority), Burn:Cycle offers a vast variety of video clips which advance the plot and enhance the atmosphere but are never allowed to dominate the proceedings. The video footage is complemented by an immense variety of speech and music, running the gamut from foot-tapping club tunes to the surreal twitterings of a gilded Buddha.

Beneath the splendour of its presentation, Burn:Cycle is an accomplished blend of puzzles, combat and strategy. The puzzles are all challenging enough to give you a sense of achievement when you've completed them but never so difficult that they thwart you completely. The strict two-hour time limit makes it imperative that you solve them as



Most of the puzzles involve working out patterns (above) and reacting to events (lower middle)

quickly as possible, which gives the whole game a seriously frantic edge.

The combat sequences are a major part of the game's appeal. Although not nearly as gory as the cut scenes – the main reason why the game carries a '15' certificate – they're reassuringly bloody and extremely satisfying. Occasionally, the cursor moves too slowly across the screen for you to stand a fair chance of making a kill, but this problem is largely confined to the first section of the game and never really threatens your enjoyment.

Burn:Cycle could well prove to be a turning point in the CD-i's fortunes. At last, someone has realised that imagination and flair count for far more than a huge budget, and that's a significant development.

Edge rating:

Seven out of ten

FUGE magazir

Virtua Racing Deluxe



The first game to make use of Sega's unconventional 32X add-on arrives, and it's based on a coin-op of refined pedigree – surely a winning strategy. One thing this home version cannot provide is the arcade machine's graphics resolution, however, immediately rendering it a much less visually arresting driving experience.



The circuit may be familiar to experienced players but powersliding the stock car round the corners is a new feature. Note how the 3D polygon trees have developed 2D tendencies

Format: Mega Drive 32X

Publisher: Sega

Developer: In-house

Price: £60

Release: December (UK)

few years ago Sega came from almost nowhere to severely dent Nintendo's near monopoly in the 16bit console market. Now the company is aiming to get a foothold in the 32bit sector with its 32X adaptor for the Mega Drive.

However, like most new hardware, the 32X has arrived with little software. So far there's just three games available: *Star Wars Arcade* (page 90), *Doom* and *Virtua Racing Deluxe* – a sequel to the SVP-boosted Mega Drive game which arrived in the UK earlier this year.

As you might expect, Virtua Racing Deluxe is more polished than its 16bit predecessor,



Unlike the original Mega Drive game, Virtua Racing Deluxe includes an animated pit crew







The Sand Park track: two players, two views and two routes (handy for getting past those slow drivers who always seem to get in your way)

with a more detailed and realistic polygon gameworld. Instead of a two-tone sky with clouds represented by white blobs, your car hurtles towards gorgeous 256-colour backdrops containing twice the number of polygons as the SVP game and boasting a frame rate of 20fps.

As well as the three original circuits, *Virtua Racing Deluxe* includes two new tracks. The Highland course has you racing through a city, complete with buildings and junctions. But more impressive is the Sand Park track, featuring valleys with sheer rock faces, a

EDGE

1995



Stock-car drivers (right) are a lot more heavy handed than other racers. They haven't got any scruples about bumping you unceremoniously off the track if it's necessary (and even if it isn't)

hairpin tunnel and forks in the road, which allow you to choose alternative routes.

The designers have also slipped in two new cars: a stock-car racer which you can gracefully powerslide through every turn; and a 'prototype' car which is fast and totally uncontrollable at high speeds. Great fun.

Another aspect which the 32X enhances is the sound. The engine note now sounds less like a swarm of bees and more like the authentic high-pitched whine of a beefy, race-tuned engineering masterpiece. It's still not perfect, but now at least it's bearable.

Anyone familiar with Virtua Racing in either the coin-op or Mega Drive form will be no stranger to the game's variety of perspectives. In this version the range of views and the basic feel of the game are exactly the same, and the twoplayer splitscreen mode has been left virtually untouched - although it's obviously a lot smoother and faster.

Prospective videogame racing drivers have so much choice these days on so many different formats that something has to be special to stand out. As a demonstration of the machine's technical prowess, Virtua Racing Deluxe hardly warrants the 'almost arcade perfect' claims that Sega nonchalantly tossed around when the 32X was first announced. Although the frame rate is commendably smooth and the colours more vivid, the game delivers an uncomfortably similar experience to the original Mega Drive cart. And, at a price of around £230 (including the 32X hardware), it isn't cheap either.

The 32X's debut racer has remained true to the original coin-op in one crucial sense: it's



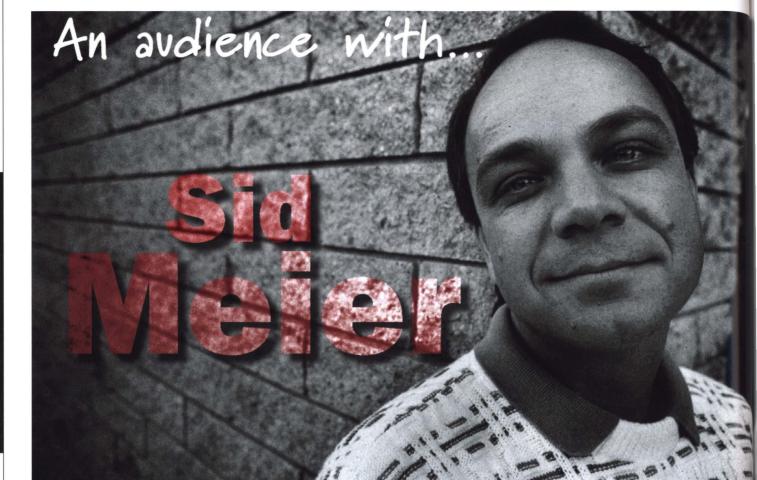
The new course-select screen shows just what you can expect from each track. However, it doesn't tell you that you don't stand a chance on the bends of the Sand Park circuit

still a delight to play. Whether you're in the midst of a heavy playing session or just spending a quick five minutes hacking around some well-designed racing circuits, the gameplay is fast and compelling and the twoplayer mode is supremely enjoyable.

Virtua Racing Deluxe has clearly got the 32X off to a flying start. However, there are bound to be lots of people who were expecting much more.

Edge rating:

Eight out of ten





The man behind Civilization and countless more strategy successes talks trainspotting, political correctness, the difference between American and British game coders, how to make the best use of CD-ROM, and games for females. Plus, of course, there's his obligatory viewpoint on 3DO.



On his first visit to the UK, the creator of arguably the most compelling strategy game on the PC shares his secrets with **Edge**

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anadian-born Sid Meier is one of the few people creating games today who has been in the industry since the beginning. He co-founded Microprose in

1982 and has since become a prolific freelance programmer (operating through Microprose) who has gained an unmatched reputation for producing addictive and playable strategy games.

Sid Meier began writing games for the Commodore 64. He then moved on to the Atari ST before making the switch to the PC in 1986. His first PC game was F15 Strike Eagle, which was followed in 1990 by Railroad Tycoon. But Meier's greatest achievement to date is 1991's Civilization, a complex anthropological strategy game whose epic scale and infinite gameplay permutations made it a PC classic. Three years after its release, Civilization is still in the charts and has sold almost a million copies. Meier's most recent project is another PC strategy game, Colonization, which looks like achieving the same success as its predecessor.

Edge caught up with Sid Meier at Microprose's UK headquarters in the sleepy town of Chipping Sodbury, north of Bristol, just before he was due to fly back to the States.

Edge First things first. How did you get involved in the games industry?

Sid Meier I'd always been interested in games before there were even computers. I played games as a kid - you know, board games, strategy games, card games. I studied programming computers in university. I kind of went into a more traditional field - systems analysis, that kind of stuff. Shortly after that, personal computers came out, and the first one that I saw that was really interesting was the Atari 800. I got an Atari 800 and found the opportunity to combine the two things I liked doing: programming and games. It came along at the right time and was a real opportunity. First I did one or two games because it seemed like a fun thing to do. Shortly after that I met Bill Stealey and he wanted to get into some sort of business in which he could be an entrepreneur. I was interested in the creative and development side and he was interested in sales and marketing. We decided we'd try something and we started a little company to see what happened. We were very lucky to be there at the very beginning of the industry. We put out a couple of products and they sold a couple of hundred and we thought

that was really great. We made some more products and we gradually got a little bit bigger and hired one or two of my friends to do a little more programming. That's how Microprose evolved.

Edge You've developed for the Commodore 64, Atari ST and PC, but never the Amiga. Why is that?

The Amiga looked like a fun machine Sid The Amiga looked like a fun machine to work on, but technically and in terms of sales the PC was doing it much better than the Amiga, and it kept on getting better. Also, the coolest programming languages were on the PC.

Edge What languages do you use for games?

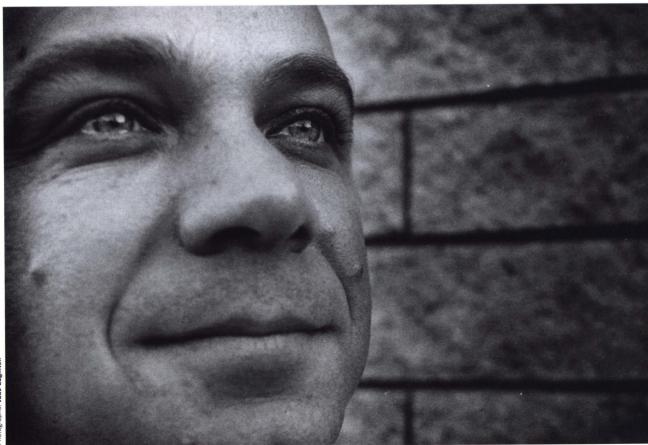
Sid On the Atari and the Commodore it was assembler and BASIC. On the PC we started right out with C, while still using some assembler for low-level graphics and sound - the high-speed stuff.

Edge Why did you choose trains as the theme for Railroad Tycoon? In this country being interested in trains borders on being socially unacceptable - trainspotters are regarded as the archetypal geeks.

Sid Really? I always thought that trains were cool. When I was a kid I had a little train set and liked to play with trains. I just started putting a few pieces of track down and in terms of sales the put some trains on them. I thought it was fun and we started adding the game to it with the money and the different cities. It turned out to be a whole lot of fun to play.

Edge Do you do all your own programming, or is the 'Sid Meier' name simply a marketing ploy?

PC Was doing it much better Sid With the exception of the latest game, Colonization, which was programmed by Alan Reynolds, all the games that I've been involved with up to now have been programmed by me. We always use special programmers to do the sounds and there might be some animators that we use, but I do the games themselves. I find it easier to actually write them than to try and design



interview

them on some kind of storyboard. So I do a lot of programming.

Edge How long, on average, do your games take to develop?

Sid A minimum of a year but typically about 18 months. First we knock up a prototype in about three weeks. Things will be moving around and you can pretend you are playing it. After that it's a continual process of adding something new, seeing if it works, then saying that now we need to add some of this or some of that. It's an interactive process. And

then one day you can just say, 'It's done.'

Edge Your games obviously have fairly complex gameplay. To what extent do you rely on playtesters to make sure you've got it right?

there but it just hasn't lived up to initial projections Sid Quite a bit. We try and get as many people as possible to look at the game and respond to it. Especially near the end when the game is pretty much as it will end up. 10 or 15 people playing it and giving a first impression. When you've been looking at it for a year you assume so many things. It's very important that it makes sense the first time you play it. I try and watch the playtesters the first time they play the game.

Edge Civilization did pretty well for a strategy game. Were you expecting that?

Sid You never know. Of course, you have an impression of every game and how much you like it. You're never sure that the people who give you feedback are typical or whether they are just telling you what you want to hear. We felt very good about Civilization as we were developing it and playing it, but we certainly didn't realise that it would be as successful as it was. It's an ambitious game.

Edge Most players would say that the main attraction of Civilization is its addictiveness. How would you define this quality?

Sid What makes a player want to play a game over and over again is the fact that there are many different interesting things to do. You try one thing one time but you might want to try a different thing the next. There are different paths you can go down and different strategies you can try. There should always be paths in a game that you haven't taken.

Edge In Civilization, the consequences of your actions are much more obvious than in, say, Sim City - you can see the results immediately. Doesn't this make the game less strategic?

Sid I thought it was more interesting. The details were all clear but the interesting part was how you worked everything together. In Sim City frustration can arise, as you think one thing is going to happen but it doesn't. In Civilization you know what the immediate consequences are but not the long term ones.

Edge How did you set about creating the artificial intelligence in Civilization?

Sid It's a process of playing the game and teaching the computer as you go. As you get better the computer also learns.

Trip is not hurting. Edge Civilization was often perceived by Trip still has a fine players as being 'unfair'. Did you life. 3DO is Still out program the computer to 'cheat'?

Sid Yes. But the computer cheats in both directions. If you're playing on the easiest level, the computer cheats to handicap itself. On extreme difficulty levels it takes huge short cuts. We're trying to make it challenging so we make a few adjustments.

Edge Unlike Civilization, your latest game, Colonization, is restricted to a specific location and period in history [it deals with European settlement of the Americas]. Why did you choose to limit the gameplay in this way?

Sid We didn't want to do a rip-off of Civilization but we wanted to please all the people who had written to us saying how much they'd liked it. We identified a few key things that made Civilization the game it was, the exploration, the military/political/ economic relationships and the competitive part against the computer, and built Colonization around those.

Edge In the game, you lose points when you burn Indian villages. Was that because of the US political correctness lobby?

Sid In America it's a somewhat controversial issue with the Indians and political correctness. We really didn't want to come down on one side. Historically, Indian villages were burned and this is a possibility in the game, but in the long run it really wasn't a good thing to do. You have to be careful with these issues.

Edge It is easy to avoid imposing your views on others through games?

Sid Well, that doesn't add anything to the game. If a game is trying to promote one particular philosophy then it detracts from the player being the star of the game, which is essential to a good game. I also want to try all the possibilities. I don't need everyone to agree with me and do everything my way.

Edge You've made a few bucks out of strategy games now. Does this mean that you're going to stick with the genre?

Sid Not necessarily. I tend to move around a bit with time.

Edge You've been in the industry a long time. Do you ever get bored with talking about games?

Sid No, it's my life so I enjoy talking about it. This whole trip [to Europe] is good, as I do tend to get bogged down with programming and designing. After a couple of weeks off I'm ready to go back and see what comes next.



Sid Meier doesn't believe that the PC necessarily holds the key to the future of interactive entertainment, but nor is he jumping on the next-generation console bandwagon

magazine January

1995

Edge How does Europe compare to the United States in terms of the games development environment?

Sid There's becoming less and less difference. I think that these days, with both America and Europe having a lot of PC users and their age rising, we can do more sophisticated games. It's more similar to the US market than it was five years ago. This makes things a lot easier for us for development purposes. If a game does well in America nowadays we've a pretty good idea that it will also do well in Europe. It helps us out a lot.

Edge What about British programming teams? Do you find that they're significantly different to their American peers?

Sid British programmers tend to be younger, more driven. They've got more energy. They're really up on the latest technology. British designers produce great graphics. Some of the American designers are a little older and still doing the kind of games we are well known for. We've been doing it longer so there are certain kinds of games that we like to do and we've got more associated with these games.

Edge The graphics in your games tend to be fairly minimal. Do you think that graphics don't matter?

Sid We prefer the word 'functional'. They do matter but they're not the critical part of the game. We're faced with the choice, even in the States, of doing incredible graphics that might only run on 30% of the machines out there - you need a Pentium and SVGA and that eliminates a lot of people. Or doing graphics that run on many more computers but aren't quite as amazing. Games like Civilization and Colonization aren't about overwhelming you with the look of the game. We wanted as many people as possible to have access to the gameplay. You start visualising everything in your mind anyway. No matter how good the graphics are, we're not going to be able to make it perfect. Fine, functional graphics is what we're aiming for. There is always the opportunity out there to make 'The Best Graphics Game', but after six months someone's overtaken you. Edge So you don't see yourself getting involved in the new breed of cinematic

CD-ROM games? Sid That's not my kind of game but I can understand why people would want to do them. You have to keep the quality of the video but tie it into a good game. Only

then can it have a real future. **Edge** What's your opinion of the trend towards CD-ROM?

Sid In the long term I'm going to figure out how to take the best of CD-ROM but

marry it with good gameplay. We're looking at something like a game with a supporting encyclopædia. Not as an interruption of the game but something to play on the side for breaks.

Edge The advent of CD-ROM means that games are getting bigger. Do you regard this as a good thing?

Sid They can either get bigger or smaller and people don't want them to get smaller so they're going to get bigger. We have Silicon Graphics workstations now and you can press a button and out comes a zillion

Sid Meier accepts that American developers are generally more conservative, while British programmers are the ones with new ideas and the creative energy to realise them

Sid We've got a 'wait and see' approach to those. They look interesting in terms of technical abilities but it's unclear what type of players will buy those machines. We're keeping an eye on it.

Edge Videogames generally, and strategy games in particular, are very male-oriented. Can you envisage women getting more involved? It would be an ideal way for games developers to expand their market.

Sid I don't think it's something I can do much about. The games out there are pretty much designed by men and until that changes the market isn't going to change. Although women do like to play *Tetris*! Edge Would an increase in the number of

female programmers help to make games generally more accessible to women?

Sid That would be the best thing. They'd have the most insight. We can only guess. I think women are missing out — they should have the same kind of fun as we have.

Edge Many people regard the PC as the machine of the future. Is that a view you subscribe to?

Sid I wasn't a fan at first. It does everything, but nothing well. It's being constantly improved, but its biggest



megabytes of graphics. The problem is that games aren't getting better as fast as they are getting bigger.

Edge As games become more sophisticated, more realistic, the calls for censorship get louder. Do you think games should be censored?

Sid No. You get into a lot of issues about who makes the decisions and who does the censoring. I don't think they corrupt children or adults anyway. People can distinguish between fantasy and reality.

Edge What about photorealistic fantasy?

Sid Movies are photorealistic fantasy. People get blown up in those and you can still recognise the difference.

Edge Are you planning to produce any games for the new consoles?

problem is sound. Technically we could build a great machine, but the 3DO experience shows that creating a world-beating games machine is more than just having a neat new idea. You've really got to market it, sell it hard.

Edge Do you think Trip Hawkins regrets embarking on the 3DO?

Sid Trip is not hurting. Trip still has a fine life. 3DO is still out there but it just hasn't lived up to initial projections.

Edge Is there a Civilization 2 in the works?

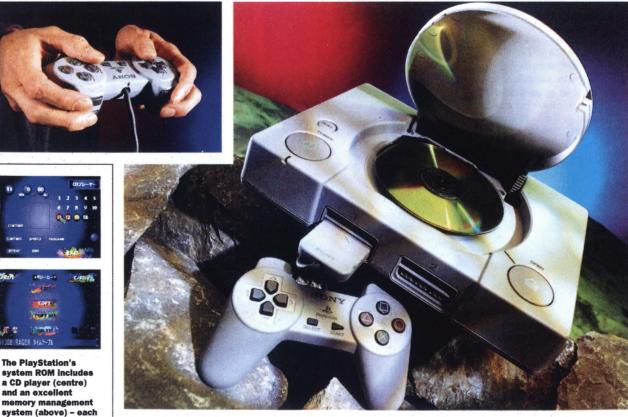
Sid Not exactly. I've worked a little on a spin-off but wasn't really able to figure out how to make it easy to play or familiar. I think it can be done but I haven't worked it all out yet. There's life left in Civilization yet...

Saturn and PlayStation: the next generation takes off/page 6 • Shoshinkai show: Virtual Boy unveiled/page10 • HDCD: is MPEG1 doomed?/page 12 • Computer Graphics Expo/page 14 • Virtua Fighter 2/page 16 • Nintendo and Sega slump/page 17



The latest **news** from the world of interactive entertainment

Sega and Sony Edge witnesses the biggest videogames events since the launch of the SFC Sell the dream launch of the SFC







100,000 PlayStation consoles at launch in SCART cables, which must be purchased separately. (Another annoyance is the PlayStation joypad's short lead.) Sega. too packs in only

The PlayStation's

a CD player (centre) and an excellent

ard has its own 15

data pigeonholes

1995





December 3 in Ikebukuro, Tokyo. Punters queue up for the PlayStation on the off chance of picking up unbooked machines. Most were successful





Playable PlayStations with Ridge Racer (top right) appeared in Akihabara (top) a week before the launch







Ultimate Parodius Deluxe (top), A.IV Evolution (middle), and Ridge Racer (above)

Onsale now

At the time of writing, the following PlayStation games were available.

- Ridge Racer (\$5800 - £35
- Ultimate Parodius Deluxe (¥5800)
- · Crime Crackers (¥5800)
- . A.IV (¥7800), A.IV Evolution (¥10,800)
- Powerful Family (¥6950)
- · Mahjong Station Mazin (¥6000)
- Tama (¥5800)
- Smiley Policewoman Pachinko Hunter (¥6800)
- Twinbee Puzzle (¥5800)
- Motor Toon GP (¥5400)
- · King's Field (¥6300)

year after Sony first revealed the existence of the PlayStation project, the company has finally delivered its most important consumer electronics product of the decade.

The December 3 ship-out of 100,000 PlayStations to stores across Japan was highly successful but surprisingly, was not met with the same euphoria-charged reception that the Saturn received on its November 22 roll-out (see pages 8-9).

However, the queuing phenomenon associated with big Japanese hardware and software launches was in evidence for the Sony machine. On the morning of December 3, Edge checked out Bic Camera in Ikebukuro, a shop which, two years ago, had 12,000 people waiting outside for the SFC cart Dragon Quest V. Sure enough, by 9am a small group of cash-padded gamers had assembled to snap up those machines that hadn't already been booked. An orderly queue was managed by shop officials, who gave out numbers to people as they arrived. Edge joined the party and after a short while handed over the required amount of yen.

On the day, Edge was able to buy a PlayStation for just ¥37,000 (£245), saving ¥2800 (£18) on the list price some games and electronics shops were offering discounts of up to 7%. The machine itself comes packaged without a game, and - like the Super Famicom - a single joypad with an infuriatingly short lead. Thirdparty pads from Namco (the Negcon, which should be available now), Sunsoft and Ascii (March and February, respectively) should rectify the problem. Other accessories available (or due soon) include memory cards, a link-up cable, a mouse, and an RGB SCART cable.

Now that Edge has had time to get to grips with the finished system, it's no exaggeration to say that Sony's first games console is a tremendous piece of kit. Even switching on the system is an experience: a sonorous tone booms out as the Sony Computer Entertainment logo fades in onscreen. If a game CD isn't in the tray, the PlayStation's internal system ROM operates a music CD player and a memory file system. This latter feature is, quite simply, the most intelligent game-save facility ever devised. Sony's petite memory cards are sold separately (¥2,000/£13), each card containing 128K of SRAM. The memory system allows files to be edited and even transferred from one card to another, a unique Sony solution to the problem that every other CD system has been plagued with.

In almost every respect, the PlayStation has surpassed people's expectations. As a performance yardstick, Ridge Racer is outstanding: the loading system is revolutionary, the graphics are incredible, and the conversion packs plenty of extra features to extend its longevity.

Sony has delivered an astonishing piece of hardware, and a range of spectacular titles is on the way. Only those UK gamers with exceptional



Who is it?

Often described as 'the father of the computer', this 19th-century mathematician and inventor spent most of his life trying to build a calculating machine. He failed, but his place as one of the pioneers of computing is assured





A typical Japanese games shop in Akihabara (left). Shops like these announced the availability of both machines several weeks ago (right)



it is...

Charles Babbage (1792-1871). After building a simple adding machine in 1822, he started work in 1833 on his ambitious 'Difference Engine'. Although never finished, it is regarded as the forerunner of the modern digital computer











From top: Sega's mouse, the joypad and Virtua Fighter. Buyers of an import Saturn or PlayStation will need a 220/110V step-down transformer (above)



The Saturn has an all-over matt-grey finish and a rather conventional joypad (top left). Unlike the PlayStation, all the Saturn's settings are saved in SRAM using its internal battery. SRAM carts can be plugged into the cartridge slot

willpower will be able to hold out until the official launch next September...

While Sony $_{\mbox{\scriptsize was still}}$

manufacturing PlayStations, Sega's Saturn arrived to a rapturous reception in Japan on November 22. 200,000 units sold out instantly on day one, but according to a Sega source, the company held back 300,000 units so it would have stocks available when the PlayStation appeared.

On the day of the launch, Edge was in Akihabara, probably the world's most awesome electronics haven, with every shop stuffed to the brim with CD Walkmans, laptop computers, LaserDisc players, and, of course, videogames hardware. Most outlets had been taking bookings for the Saturn in the month prior to the launch, but Edge's attempt to book one two weeks earlier had proved impossible.

At 8am in the morning, Edge arrived at one of the most hardcore games stores in Akihabara - the Laox Computer Game Centre - where a couple of thousand unbooked machines were available and joined the tail of a queue consisting of around 300 expectant gamefreaks. By 9am

that number had doubled. Being relegated to the lower reaches with ticket number 306, Edge endured two and a half hours before a Saturn was in the bag. If it hadn't been for the shop assistant dressed as one of Sega's Coneheads (from the marketing campaign depicting Sega's console being hammered out by inhabitants of Saturn with elongated heads) the wait would have been unbearable. In the event, the machine cost ¥44,800 (£290), with Virtua Fighter the only worthwhile game available.

So the hype had worked. Saturn was a huge success, and Japanese gamers were beside themselves as they walked away with their prized possession and a near-perfect conversion of the Virtua Fighter coin-op. →





The JVC V-Saturn was available at the same time as the Sega machine, but actually finding one to buy was difficult. Edge was given a demo at JVC's offices in Shibuya, Tokyo. All Saturns have an MPEG port (right)







November 22, Akihabara, Tokyo: 600 hundred eager gamers wait in line to hand over ¥44,800. Coneheads maintained the peace (left)

worth it: the Saturn is undeniably an excellent machine. For ¥44,800 you get the hardware itself and one joypad (with a longer lead than the PlayStation's), although pre-booked machines in other shops were often accompanied by a free extra pad. Like Sony's system, the Saturn is supplied with only composite cabling. However,

blow all his savings



The Laox Computer Game Centre where Edge bought its Saturn. Five games were available, but most people got the machine with VF and an extra pad

rather cheekily, a customised AV port means that Sega's cables are the only ones that will work. An extra ¥2000 (£13) will get you the far superior S-Video hook-up, and an RGB SCART lead is due shortly.

The joypads, which are attached by a 7ft chord to a snug port on the unit's front, are perhaps the Saturn's most conventional feature. First impressions are of cheap plasticky and clicky buttons, but the six-button layout will probably win over beat 'em up fans, and this is also Sega's first pad with twin SNES-style top buttons.

Loading times are short. The spectacular boot sequence (in which the Sega Saturn logo coalesces from spinning polygon shards) takes five seconds, and you can expect Virtua Fighter to be up and running in another six or seven. This has confounded critics who said that even double-speed CD drives couldn't compete with carts. Sega (and Sony) have proved that with dedicated processors handling the drive (the SH-1 in the Saturn's case), negligible access times are possible.

Unfortunately, the only reason to buy the Saturn so far is Virtua Fighter. It is indeed a stunningly playable game - although its slightly glitchy visuals time when asked to shift a load of polygons - but the other software available fails to do justice to the machine. And a look at Saturn's release schedule implies that a range of good games could take time to surface. Big titles that ideally would have been available at launch - like. Panzer Dragoon and Daytona USA have now been pushed back until the spring. Sega may have arrived in style, but the next few months

will be crucial.











From top: boot-up, title, language select, music player with polygon spaceship animation

And the launch frenzy was (almost)

superhighway', ' were used.

free Rolodexes manufacturers upplied to all would be console

I wish girls played videogames (stop

logging the

2

Vext time they might use

wish all consoles and movies

se released worldwide on the same

wish there was an approval

would find all pointless FMV actually call

sequences in game developers' computer I wish it was easier to get the plastic off new CDs.

games that they would enjoy playing wish they had fish and chip shops in wish I got a royalty every time wish developers would create nore games that they

Dave Perry is president of California-based Shiny Entertainment, whose first game, Earthworm Jim, was

of in the color

eleased earlier this year.

imply that the Saturn does have a hard

news

the industry

Nintendo pins hopes on Virtual Boy Nintendo's 32bit VR system has failed to excite

Just as everyone else seems to be forgetting 'virtual' as a meaningful tag for anything gamerelated, Nintendo builds an entire platform around it Few are impressed although Nintendo must have something special lined up if it's projecting VB sales of 3m in Japan alone in its first year



The Harumi Centre in Chiba was the venue for the Shoshinkai show. The promise of Nintendo's new hardware proved a big pull

he November unveiling of the Virtual Boy in Japan signifies an important change of direction for Nintendo. Either it has gone completely mad or it deems the future of videogaming to be crude, red and likely to induce headaches.

That was the opinion of most delegates who attended the Shoshinkai festival at the Harumi Centre in Chiba, Tokyo. Shoshinkai is an annual event for Nintendo's distributors and was the chosen venue for the Kyoto company's revelation of its '32bit VR system'. The show ran for two days but Edge attended just the first - there was little

else apart from new Super Famicom games to hold interest.

Nintendo's system was shown in two forms. Playable versions of the unit itself were installed on a trio of circular stands, and a giant enclosure was

where a dramatic (ie 'is this really it?') presentation of the system's graphics and sound took place with cardboard goggles distributed to anyone brave enough to enter.

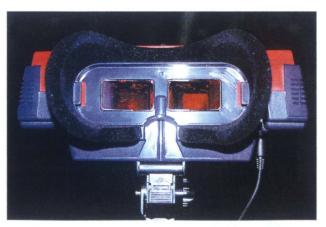


technology comes from a Massachusetts company called Reflection Technology Inc., which





The Virtual Boy hardware has a red and blue body. A joypad with elongated handles is attached via a lead



Looking through the Virtual Boy is like sellotaping two red Game Boys to your face (ie the prototype wasn't particularly impressive)

Data stream

Marketing budget for Magic Carpet: £200,000 Marketing budget for Donkey Kong Country:

£2 million
Percentage of targeted
UK adults and children
who are expected to
have seen the Donkey
Kong Country
advertisements three
times: 70%

Marketing budget for Microsoft on updating their image:
£60 million

Percentage of CD-ROM sales accounted for by Microsoft: **11.41** Number of formats *Rise Of The Robots* is to be released on: **22** Number of units 3D0 claims to have sold:

250,000
Present value of the videogames market: £13.5 billion

Projected value of the videogames market by year-end 1995:

£20 billion Growth in the videogames market over the last 15 months: 67.5% Increase in videogame sales caused by half-term holidays: 20% Estimates of annual cost to industry caused by piracy: £400 million CD-ROM access time required to comply with MPC1: 1000ms CD-ROM access time required to comply with MPC2: 400ms Typical hard drive access time: 11ms

for 156,931 aging games carts: £200,000
Dimensions of a 35mm film screen: 20x35ft

Price recently offered

Dimensions of an IMAX screen: **80ftx100ft** Number of IMAX theatres in the world: **115**

Number of PlayStations available at launch: **100,000**

100,000 Number of defective Saturns that have caught fire: 10 Cost of a single game of Virtua Fighter 2: ¥200 (£1.30) → and was formed by a team of MIT scientists. Nintendo Of America's press release distributed at the show reveals that 'Nintendo has obtained exclusive worldwide licensing rights within the videogame market to Reflection's virtual display

Nintendo chairman Hiroshi Yamauchi (above) put on a brave face

technology', and that Virtual Boy is its 'initial application'.

It's difficult to convey just how crude Virtual Boy's graphics are. While the technology is presumably advanced for the cost, its potential for videogames is all but invisible in the first crop of titles. Nintendo unveiled three prototype games at Shoshinkai. all in playable form. First up was Mario Bros VB (no. really) - imagine a static screen and Mario hopping from platform to platform. Space Pinball is a standard pinball game with the 3D effect allowing the ball to travel beneath the table. Telero Boxing is just plain weird. Needless to say, all three were extremely early versions.

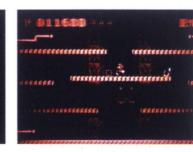
Ironically, Nintendo is expecting great things of the Virtual Boy. The company has stated that it plans to sell three million hardware units and 14 million game cartridges in



NCL officials demonstrated the VB to show delegates. Few were impressed with the crude monochrome display

Japan alone in the period from its launch in April 1995 to March 1996. The system will retail at ¥19,800 (£128), and three games will be available at launch, costing between ¥5000 and ¥6000 each.

Virtual Boy is on its way to the States, but whether it will make the journey to the UK hasn't been confirmed. Next month Edge quizzes its designer, Gumpei Yokoi (who was also responsible for creating the Game Boy), and asks: just what is Nintendo playing at?







Virtual Boy as captured by the Edge-cam. Clockwise from top: title screen complete with zooming letters; Mario Bros VB – possibly the 'flagship' title; the underwhelming Space Pinball; and Telero Boxing – hardly a threat to PlayStation Boxer's Road

What is it?

Perfected in 1948, this invention not only had a profound impact on computer technology but revolutionised the electronics industry as a whole. Without it, home computers would have remained an impossible dream

Specs

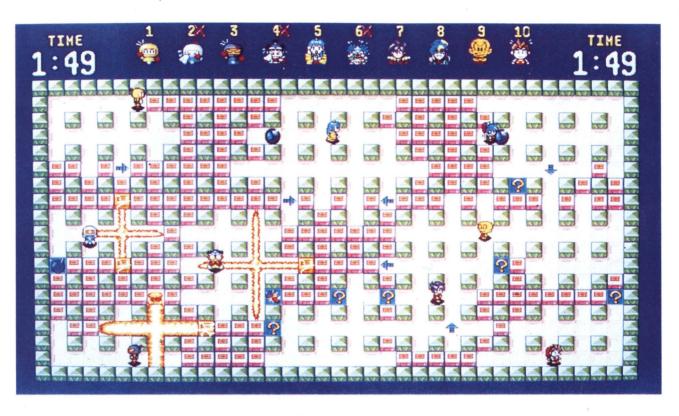
CPU: 32bit NEC V810 @ 10MHz Dimensions: 217x254x110mm Power: 6 AA batteries Weight: 760g (body only) Accessories: AC 100V adaptor Battery charger



frame-rate

frame-rate mate that's what you want get that polygon engine churning out those frames pal the more the merrier just get millions of the suckers down your scart lead and you're laughin' forget your dull pc flite sims that chug along at 10 frames a second i'm gonna get me a PlaySaturn that baby chucks out a cool 60 frames a second that's six oooooh-baby frames a second so your Ridge Racing-Virtua-Kick-Assing games are just the business read it and weep pc boys

High-definition television represents the future in gaming — at least for Bomberman, which in a new iteration makes use of the technology to enable ten players to play simultaneously. Creator Hudson is also keen to show how it's getting to grips with NEC's innovative, fax machine-compatible PC-FX console.



Hudson Soft

udsor avera video is a co overs divers and movie production

udson Soft is not your average Japanese videogames outfit. This is a company with overseas interests as diverse as television

and movie production and coin-op museums. Recently, it has even been involved in raising AIDS awareness among young people.

After establishing itself with programming languages and utility

ges and utility software in the early '80s, Hudson began to focus upon what was to become its true vocation: games. Its original titles and conversion work from 1984 onwards rapidly gained it recognition as an industry leader, nd its PC Engine conversion of

Irem's arcade smash R-Type is still regarded as the system's definitive contribution to the shoot 'em up genre.

To celebrate its partnership with

Virgin UK, Hudson Soft invited Edge

to visit its Japanese headquarters

in the northern city of Sapporo

Hudson's hardware achievements are as formidable as its software successes. In 1987, in collaboration with Japanese giant NEC, it produced the PC Engine, arguably the first machine to deliver affordable arcade-quality gaming to the home. Only a year later it pioneered CD-ROM storage in the form of NEC's PC Engine add-on, the CD-ROM².

Although it enjoyed only minor success in the US, the PC Engine gained a huge following in its native land, where a combined Engine and CD-ROM unit, the PCE Duo-RX (the



Hudson Soft's research and design centre in Sapporo is the company's Japanese HQ

magazine February 1995





best multiplayer game in the world, runs on a high-definition TV. Its creator, Katsuhiro Nozawa (left)



machine's fifth incarnation), was recently launched.

Hudson is, of course, best

known for its Bomberman series. The original game of bomb detonation clumsily entitled The Bomber Man - was written in 1980 purely as an exercise to demonstrate the power of Hudson's own BASIC compiler. It eventually enjoyed a small-scale release in Japan as a oneplayer PC game, with just one type of bomb and one enemy.

It wasn't until the arrival of Nintendo's Famicom system that the

'I personally believe that the Famicom version of Bomberman is the one and only version of the game'

Nakamoto Shinichi, Hudson Soft

concept was revived. Struggling for inspiration after cartridge hits such as Lode Runner and Star Force, Hudson Soft plundered its back catalogue and happened across the game that would prove to be its crowning glory.

After seeing power-up systems in popular shoot 'em ups of the day, the game's designers incorporated a similar concept into Bomberman - bombs could be increased in strength by collecting icons. A concept that, of course, made Bomberman a classic lesson in competitive gameplay.



SFC Super Bomberman 3, demonstrated by head designer Tatsumitsu Watanbe

But it was a still only a twoplayer game. NEC's technology was to change that. 'We were really lucky that the PC Engine had a multitap,' reveals Nakamoto Shinichi, Hudson Soft's director of R&D. 'Without it, the PC Engine version would have been merely a reproduction, and would probably soon have been forgotten.'

The development of multitap hardware was arguably the single most important factor in Bomberman's success. It made the game a true party experience, one that managed to induce more competitive energy in its participants than probably any other game before or since.

And Bomberman is still going strong. Hudson's most ambitious game to date is Hi-Ten Bomberman. But you won't see it turning up in the home. The game will only run on Hudson's in-house hardware - a combination of custom PC and stripped down PC Engine technology. It is aimed specifically at the exhibition/show market, and its unprecedented tenplayer capacity has already proved a big draw on recent tours in Japan. The size of the playing area and the number of players means it has to use HDTV technology - the first game to do so.

And it certainly is an experience. It's a simple equation: multiply the fun of standard Bomberman by two and you arrive at the entertainment provided by Hi-Ten. It excels as a demonstration of both cutting-edge display technology and lovingly crafted gameplay.

Although the system has only enjoyed floor space at Japanese events, it may not be long before British audiences get a taste of the action. Hudson has firm intentions to bring Hi-Ten to these shores, although dates and venues have yet to be agreed.

Despite the hi-tech adventure of Hi-Ten Bomberman, Hudson is still









The latest version of Hudson's explosive classi is Super Bomberman 3 for the Super Famicom

prescreen



Edge tested the PC-FX with the help of its lead designers, Koji Arai and Kazunori Yasui











Battle Heat is now out for the PC-FX. All the moves are prestored in anime form and played back, Dragon's Lair-style. CD access is very fast

→ committed to the established games platforms. Hence Super Bomberman 3, now nearing completion for the SFC.

This is the first game in the SNES series to allow five players to take part — the fifth player starts in the centre of the playing area. With more collectibles and extra level details, including mine carts and even creatures to ride on, the game promises to offer more variety than previous Bomberman outings, if nothing else.

The second game in the series, released only recently in the UK, met with a fairly lukewarm reception among die-hard fans of the original. The main criticism levelled at it was that the gameplay had been tinkered with just a tad too much – familiar features had been thrown out and replaced with new, but not necessarily better, ideas. And Super Bomberman 3 has been tinkered with even further. Whether it will appease or further annoy its fans will no doubt become clear on its release in April '95.

Despite the multiplayer game's following, the anticipation surrounding the third SNES incarnation, and the HDTV *Hi-Ten* system, Nakamoto Shinichi still hankers after the old days. 'I personally believe that the Famicom version of *Bomberman* is the one and only version of the game,' he admits.

Hudson's link with NEC,

which began with the PC Engine, has continued to flourish, and has just blossomed in the form of a new machine, the PC-FX, which is aimed at recapturing NEC's former prominent

position in the Japanese videogames industry.

Games like Bomberman won't be appearing on the PC-FX, though, because of NEC directives on software development. Apparently, the company's intention is to concentrate solely on software based on popular anime series, so although it is claimed that the system is able to handle both sprite and polygon-based titles, the range of software will be heavily biased towards pre-generated animated footage.

This marketing strategy is perfectly illustrated by Battle Heat, a Fist Of The North Star-inspired fighting game which is scheduled for release at the same time as the machine. Battle Heat only conforms to the established beat 'em up formula at the beginning, in as much as each player gets to choose their fighter from a selection of eight. From then on, the action is turn-based. When a player has gained the initiative, he is free to unleash an attack from his character's repertoire of moves rather like a traditional Japanese roleplaying game. The resulting animation - be it a successful hit, block or whatever - is immediately kicked in from CD, after which the recipient is able to return in kind.



Although primarily a games machine, the PC-FX can also receive faxes and hook up to NEC's PC98 computers





NEC's unusual PC-FX games console was released on December 9 in Japan. Three games shipped at the same time



The game's theme, plot and characters were all designed by members of Hudson Soft's in-house team and then relayed to an external animation studio where the anime footage was created. This is fantastical action-crazed stuff featuring typically

The PC-FX is aimed at recapturing NEC's former prominent position in the Japanese videogames industry

Japanese camera angles, furious speed lines and dramatic pans.

The other project from Hudson Soft's PC-FX development arm is Team Innocent. Although it too comes armed with umpteen megabytes' worth of pre-rendered stills and footage, it also features traditional sprites, blending the two to create a space adventure with a very distinctive flavour.

With backgrounds rendered using Alias software on Silicon Graphics machines, *Team Innocent* is similar in style to Infogrames' Alone In The Dark

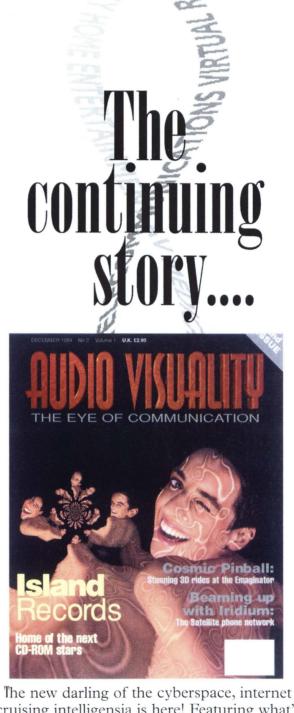


Hudson's *Team Innocent* for the PC-FX is a bizarre adventure mixing anime and pre-rendered video and stills. The video quality is superb

series. The PC-FX holds several views of each location in RAM and flips between them as the player moves around. The most impressive aspect of the title, though, is its stunning, fullscreen digital playback drive, courtesy of Hudson's custom hardware.

But, perhaps wisely, Hudson is not depending on the PC-FX for its future. With projects for the PlayStation, Saturn and 3DO in development, it looks as if the company will also have a strong presence in the next-generation mainstream.

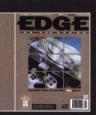
Edge wishes to thank Taeko, Earl and all at Hudson Soft for their hospitality.



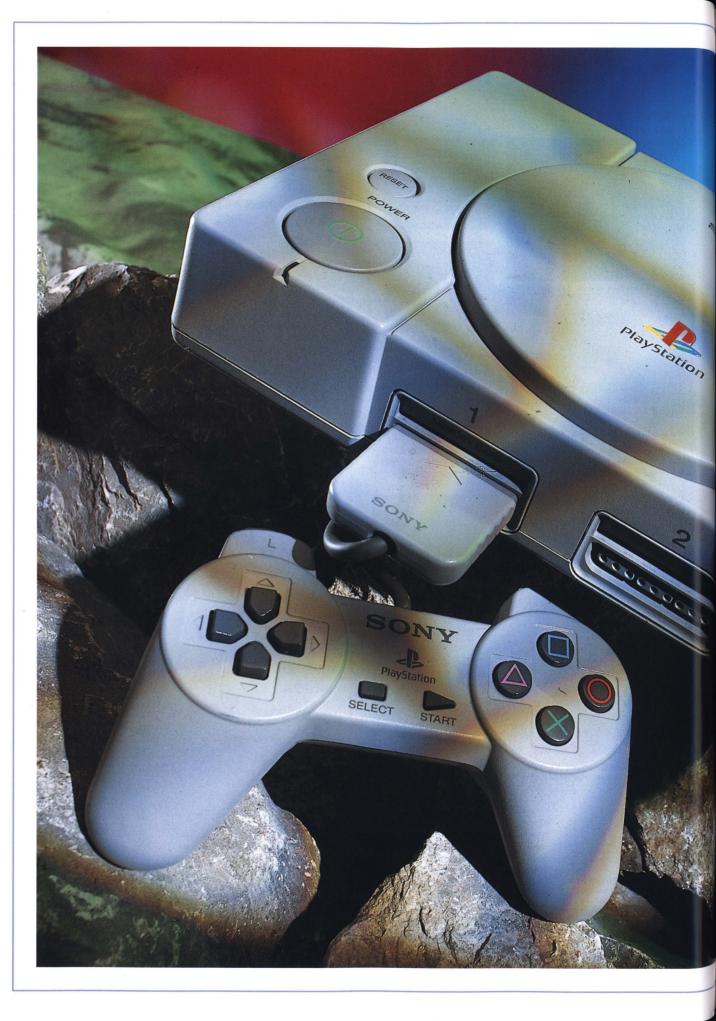
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The PlayStation story to date, including some robust opinions from competitors Nintendo and Atari. Right now, it seems that most developers are excited by Sony's strategy, with the possible exception of its inclusion of a 2x CD-ROM drive. Of greater concern, perhaps, is Sony's lack of track record in game publishing.





Play Station OPEN The wait is over. The PlayStation has been launched in Japan and Sony has joined the elite club of console manufacturers. But what does Sony know about videogames? How can it possibly compete with the likes of Nintendo? Edge weighs its chances of success

Sony's bid for power

t's early December in Tokyo. The Christmas buying season has started in earnest and The Land Of The Rising Sun is in the grip of its annual frenzy of consumerism. Swarms of fashion-conscious young Japanese pour in and out of expensive department stores, subway trains groan under the weight of weary shoppers, and the world's electronic goods Mécca, Akihabara, pulsates under a skyline of shimmering neon. In the midst of



'We do recognise Sony as a major player.
It's just that we're confident that we know videogames better than anyone, and we feel supremely confident that at every technical turn the Ultra 64 is a superior machine to the PlayStation and will offer a greater gaming experience'

Peter Main, Nintendo

this buying mania, Sony rolls out its single most important consumer product of the 1990s: the PlayStation.

The world's most powerful videogames system hit the shops on a mild December 3. The Japanese had been exposed to the machine in the weeks prior to the launch by a series of TV ads depicting brainwashed college students banging on desks and chanting the name of their long-awaited dream machine: 'PlayStation... PlayStation.' Stores built up consumer awareness with videos of forthcoming games. And, in the final stretch, playable machines appeared outside storefronts running the jewel in Sony's crown, Ridge Racer.

And yet, unlike Sega's big day two weeks earlier, the PlayStation was met with only moderate hysteria in the Japanese high street. Queues were far less impressive than the ones that had gathered to meet the Saturn, and there were few sell-outs for shops to brag about. For a company with no significant experience in the games industry, the launch of the PlayStation was undoubtedly a spectacular success, but the fact that Sony had a stronger software line-up, a better machine and an all-important price advantage was not reflected in the sales figures.

The PlayStation, of course, lacked one thing: Virtua Fighter. In the eyes of Japanese gamers, Sega's groundbreaking beat 'em up more than justified the price of the Saturn by itself. Ultimately, Sega's coin-op kudos proved to be more than a match for Sony.

The arrival of the PlayStation in Japan is the culmination of a long-standing campaign by Sony to gain a stake in the ever burgeoning videogames market. Until now it has failed to make any significant headway. Ever since its investment in the abortive MSX home computer standard supported by manufacturers like Toshiba, Matsushita and Sharp - Sony's forays into the sector have not been great successes. and it has remained a bit player on the global videogames stage. Some observers suggested that the company was too big to be happy with just a piece of the market, and too inexperienced to know how to

As Nintendo's Peter Main puts it: 'They haven't actually done that much in the games market so they can't be judged just yet. What you can do is ask how they've done in music and movies, and the answer is not that well.'

One of the reasons for Sony's reluctance to launch an all-out assault on







The PlayStation/SNES CD-ROM hybrid (artist's impression, top); Sony's SNES soundchips (middle); and NCL's Kyoto base

the videogames market was Nintendo. Sony became increasingly intimidated by the Kyoto giant during the most successful years of the Famicom (1985-88), and the company was further subdued by the arrival of the Game Boy in 1989, which saw Nintendo encroaching on Sony territory. Sony was so impressed with the design and performance of the low-cost handheld that its main R&D team working on consumer portables was apparently chastised by its manager on the basis that 'the Game Boy should have been a Sony product' (although it would undoubtedly have been called 'Gameman' if Sony had originated it). According to David's Sheff's definitive history of Nintendo, Game Over, one engineer was so ashamed that he actually left the company.

In 1988, though, Sony saw fit to embark on a mutually beneficial agreement with Nintendo. The deal was to develop a CD-ROM drive for the 16bit Super

Famicom - a console that wasn't due on the market for another 18 months. This was a chance for Sony to get a grip on the market it had been eveing for years. Nintendo wanted CD-ROM. Sony wanted market share. Thus two of the most successful and feared companies in the Japanese electronics industry joined forces.

The technology that was to bring them together was Sony's (and Philips') CD-ROM/XA, an extension of the CD-ROM format that interleaves compressed audio, visual and computer data (and allows both to be accessed simultaneously with the aid of extra hardware). However, Sony also had plans to develop another Nintendo-compatible machine, a self-contained entertainment system that would play both SFC cartridges and a new CD format designed and solely licensed by Sony. Called Super Disc, this proprietary format would also form the basis of Nintendo's own CD-ROM drive. And so the PlayStation was born.

Sony had seen a potential to create a new kind of videogame on CD-ROM by using its vast entertainment interests, which included Sony Music and Columbia Pictures. In fact, it was so confident of its new format that it planned to be the 'sole worldwide licensor of the Super Disc'.

Of course, such actions didn't endear Sony to Nintendo. As the PlayStation started to take shape, Nintendo found that it was becoming an accessory to the global ambitions of its partner. The rival electronics giant had Nintendo's market share firmly in its sights and was only a few steps away from starting to entice its licensees and customers away.

Nintendo's relationship with Sony had always been fraught with difficulties, though. NCL experienced problems when it enlisted the support of Sony's digital and audio R&D division to design a soundchip for the Super Famicom. After its completion (it was designed by Sony's hardware supremo Ken Kutaragi, the chief engineer who went on to create the chipset for the new PlayStation), Sony retained all rights for the programming of the chip, and then charged Nintendo excessive fees for access to information for its developers.

Although irritating, development hiccups were one thing Nintendo could handle. But faced with a problem that threatened its core business, it knew it needed to take drastic action. One month before the Chicago CES in 1991, Hiroshi Yamauchi, the chairman of Nintendo, instructe'd his son-in-law Minoru Arakawa and Howard Lincoln to travel to Philips'



'The PlayStation is definitely the sort of machine the market has been waiting for. It provides a huge technical leap forward even more apparent to the end-user than the jump between 8bit and 16bit. It's revolutionary rather than evolutionary'

Gary Bracey, Telsta

HQ in Eindhoven, Holland, to secure a deal that would allow Philips to develop a CD-ROM platform for the Super Nintendo. The deal also permitted the co-development of a bridge format that would allow compatibility between Philips' own CD-i platform and Nintendo's proposed CD-ROM games.

Meanwhile, Sony chose the first day of the 1991 Chicago CES to publicly announce the development of the PlayStation and cement its relationship with Nintendo. The news of the system was an immediate press sensation and was well received by an industry keen to usher in a new dawn of CD-ROM technology without writing off new cartridge systems like the SNES. But it was a futile exercise. On the second morning of the show, things went horribly wrong for Sony.

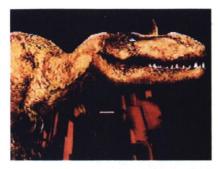
At 9am a press conference was held by Nintendo, attended by the industry figures and the world's specialist press. It was expected that Nintendo would divulge details of its alliance with Sony and its PlayStation. Instead, Howard Lincoln revealed to the assembled industry watchers that Nintendo had chosen to work with Philips.

Sony was enraged. The news wasn't entirely unexpected, though. Information about the deal had started to circulate within the company 48 hours previously, and the ageing chief executive, Norio Ohga, had acted immediately to stop it by telephoning Hiroshi Yamauchi directly at NCL. In David Sheff's book, Howard Lincoln reveals: 'There were tremendous efforts on a worldwide basis to stop that press conference from happening. They [Sony] gave up on us but they kept pressuring Philips.'

But, as Lincoln's CES announcement made patently clear, it was all in vain. All Sony could do was bite the bullet and soak up the humiliation.

For Sony to be snubbed in this way was a great shock to everyone concerned, not least to senior management in Sony's emerging games division. 'They stabbed us in the back,' says SEP boss **Olaf Olafsson** in Game Over. After a period of legal wrangling and much name-calling by Sony, Nintendo managed to extricate itself from the contract it had signed with Sony without suffering a penalty. But that wasn't the end of the matter.

Throughout 1991 and 1992, development of the PlayStation progressed on the general understanding that an agreement would be reached over the licensing of Nintendo CD software. At the end of 1992, Nintendo, Philips and Sony





The realtime dinosaur demo (top) became a benchmark of PlayStation performance. SCE's Tokyo HQ is located in Minato-Ku

signed a deal whereby Sony's PlayStation would be able to run SNES CD-ROMs but left Nintendo with the sole rights to all its games, including CDs.

But the PlayStation never made it out of Sony's factories and onto the shelves. The hardware reached the prototype stage, and the software even started to be produced – one 'absolutely awesome' game was apparently close to completion – but after a tortuous round of negotiation and litigation with Nintendo the project was scrapped. To this day, around 200 original PlayStation units lie in Sony offices around the world collecting dust.

But no-one really expected Sony to give up after it had come so far. And

to give up after it had come so far. And indeed, it simply went back to the drawing board and continued the project alone.

When the PS-X, or PlayStation-X, surfaced in late 1993, the biggest surprise

was that the machine would not embrace the multimedia aspirations of The 3DO Company and Philips. Sony had visited 3DO when Trip Hawkins was selling his 3DO technology to hardware manufacturers, and its engineers came away from the San Mateo offices distinctly unimpressed, maintaining that the technology was 'nothing new'. Instead, Sony took a confident stride towards creating its own thoroughbred games machine. That move now appears to have paid off.

Perhaps the most crucial episode in the whole PlayStation saga is the establishment of a global network of supporters. Sony learned from the mistakes made by 3DO and Atari and realised early on that it would not have a place in the market without good software support. Since late last year the company has set about recruiting prominent developers throughout the world. Few have refused. Naturally, those with a strong allegiance to Nintendo offered a polite, 'Thanks but no thanks', but some did make the switch from developing for rival hardware. Mortal Kombat III was one game that Nintendo thought it had in the bag for the Ultra 64, until Sony's PlayStation hardware arrived at Williams. Now the game is due to surface in the arcades using Sony's technology, and a portover will appear a few months later on the home system.

For a company with virtually no past record in the games hardware field, Sony has done a remarkable job in persuading developers to climb aboard. Since the announcement of the machine, over 250 companies worldwide have signed up and some 700 development stations have been shipped out.

Even Nintendo acknowledges the scale of Sony's success. 'We're well aware of the hype surrounding the PlayStation,' says Peter Main, 'and I think that Sony is doing a great PR job at the moment. Thankfully, it seems to be at the expense of the 32X and Saturn, which people now seem to be sceptical about.'

Demonstrations of Sony's technology to developers have done more to convince the industry of the machine's benefits than any number of marketing executives could have. Konami UK's **Pete Stone** recalls his first experience of the hardware: 'Sony showed us a demo back in January. It was running at only half-speed but even then we came out of that meeting with our jaws on the floor. We've since been hugely impressed with the sheer processing capabilities of the machine and the routines that are built into the hardware.'



'The PlayStation is very strong, certainly in comparison with the Saturn, but Sony has absolutely no experience in this market and the games market really is like no other. You can't just come in and buy market share. You have to build it'

Darryl Still. Atar

Sony PlayStation

The involvement of coin-op companies like Konami and Namco right from the start has been one of the most important factors in the evolution of Sony's hardware and software. As well as encouraging the translation of big coin-op hits like Namco's Ridge Racer and Konami's Ultimate Parodius, Sony knew it would be a smart move to use the PlayStation as a breeding ground for arcade products - the rich arcade heritage of both companies was something that it would benefit immensely from. 'We're one of Sony's closest partners,' claims Pete Stone. 'We've got 12 titles in development for the PlayStation, and we're also developing coin-op games using the Sony chipset.'

Although the quality of Sony's technology has never been in doubt, the company does have one major problem in that it lacks an established internal games division for churining out quality titles. Sony Computer Entertainment's in-house muscle is actually a collection of external developers that have worked on a range of titles for release during the first six months, including the launch racer Motor Toon GP (from thirdparty team Bandit) and the shoot 'em up Philosoma. Without its own 'Sonic Team', or a game design guru like Miyamoto, many feel that Sony will be relying too heavily on thirdparty product of varying quality. And this view is largely confirmed by the launch line-up. Leading the pack is Namco's excellent Ridge Racer. while a glut of mahjong and pachinko games bring up the rear.

Something else that doesn't inspire confidence is Sony's own track record in game publishing. Since its establishment in 1991, Sony Electronic Publishing (SEP) has seen its reputation plummet with the release of sub-standard cartridge games like Last Action Hero and Cliffhanger.

Many people also rightfully questioned Sony's acquisition of Psygnosis in 1993 for £30 million. The question on most people's lips was: Why was a company with so few quality games to its name placed in such high esteem by Sony? Some maintain that it was the company's technical expertise that Sony was interested in, while others claim that it just didn't understand the market.

'Sony couldn't see the wood for the trees,' one developer told **Edge**. 'High-paid Sony execs were seduced by this company that could make videogames that looked like computer movies. That fact that the games also played like movies didn't seem to ring any alarm bells.'

But of course, the most painful irony of all is that Psygnosis' most successful game and the company's flagship, *Lemmings*,





Sony chic: the blue debugging station (above). Namco has played a vital role in the PlayStation's evolution (Tokyo HQ, top)

was designed by Scottish thirdparty developers DMA.

SCE's slogan, 'If it's not realtime, it's not a game', sits uncomfortably with the image Psygnosis has acquired. However, in its defence, Psygnosis claims that with the PlayStation it now has a machine that can handle highly sophisticated graphics in realtime, and that the machine will mark a turning point in its game design.

One thing that makes this more credible is the streamlined development process that Sony seems keen for its developers to adopt. Custom 3D libraries such as those in RenderMorphics' Reality Lab – rumoured to be a part of the Sony machinery soon – will make producing ultrafast 3D a breeze. This will minimise the need for extensive low-level programming and allow the game designer more time and freedom to practise his art. The extensive libraries provided in the PlayStation hardware itself have been also

well received in the development community. A prominent US developer recently told **Edge**: 'We got the development kit, started fiddling around, and in two weeks had something like *Rad Mobile* up and running.'

Sony's decision to go with CD-ROM technology has had mixed reactions. Certainly, from the titles **Edge** has seen, the PlayStation CD-ROM technology has been designed to deliver games with the minimum of fuss, and wait times are negligible. But prejudice against CD-ROM is still strong in the industry.

'With CD, even a double-speed drive isn't fast enough to deliver what gamesplayers are used to,' admits Vivid Images' Mev Dinc. 'Having said that, we just have to accept those limitations and use our skills to write great games for the PlayStation. I'm sure we will, because, CD-ROM aside, it's a brilliant machine.'

Konami's Pete Stone agrees: 'Software will have to be written and configured thoughtfully to get around that problem and what we may see is a slightly different style of game emerge, one that isn't particularly reliant on speed.'

Sony's decision to go with CD-ROM technology is undeniably the right one, though, for one specific reason. The most significant effect that Sony has had on the market – even before the arrival of the PlayStation – is its persuasion of thirdparty developers to charge up to 40% less for their PlayStation games than they would for cartridge software. At launch, most software for the PlayStation cost under ¥6000 (£36). In contrast, most new SFC games still retail for almost ¥10,000 (£60).

Now the PlayStation is available in Japan, Sony's attention will inevitably turn towards the global market. The company maintains that the machine will be released in the US and Europe in September 1995. Very few people (with the exception of Sega, Nintendo, 3DO and Atari, of course) will be sorry to see it arrive.

'It's certainly good to see a company the size of Sony entering the market,' says Fergus McGovern, head of Probe Software. 'Their past hardware successes do suggest that they know what they're doing – although when they've entered new markets they've had problems, such as writing off billions of dollars in Hollywood.'

But the point is surely that Sony can write off billions of dollars. This is a company with immense resources, and if an organisation as large and powerful as Sony is determined to do something, it usually succeeds. The videogames industry may never be the same again.

1001

Ridge Racer



Reputedly the result of only six months' work, Namco's debut PlayStation project is a substantial achievement, and not only because it is the best-looking game to appear on a console, something that really hits home when watching your laps in replays. Is it really 'more a simulation than an out-and-out racer', though?

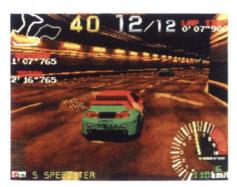




Ridge Racer looks amazing throughout, but there's occasionally slight slowdown when your opponents' cars or the helicopter appear close up

o entertainment medium changes as fast as videogames. The boundaries of the art are constantly being pushed further back, with consumers' expectations changing accordingly. Often a single product is responsible for a major leap forward. Ridge Racer is an honourable member of that elite group. Just as Super Mario Bros redefined the platform genre and Street Fighter II revolutionised the beat 'em up, so Namco's Ridge Racer coin-op has taken the racing game into a new dimension.

Before Ridge Racer, the leading arcade racer was Virtua Racing. But now Sega's game simply isn't jaw-dropping enough to satisfy appetites whetted by Namco's overwhelming



Sending these barriers flying is just as satisfying as it was in the arcade version



Unlike in the arcade, an external view gives you a chance to view other cars as they pass

texture-mapped graphics. Ridge Racer has opened up a whole new world of computergenerated realism which puts plain, flat-shaded polygons even 180,000 of them per second - firmly in the shade. And now it looks set to repeat that success in the domestic market. Because, as many suspected (but just as many doubted), PlayStation Ridge Racer is a nigh-faultless conversion. Which is pretty impressive when you think that it's the fruit of just six months' labour, on a machine barely in its infancy.



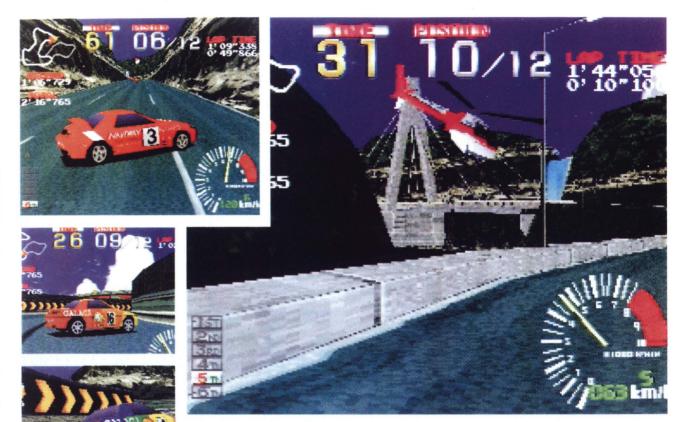
Boot-up (a paltry 10 secs) is made endurable by an arcade-perfect game of Galaxians (top). The range of cars means you can pick one that suits you (middle)

Format: Sony PlayStation Publisher: Namco Developer: In-house Price: ¥5800 (£37) Release: Out now (Japan)





testscreen



Using the outside view is far harder than controlling the car from inside the cockpit – mainly because the sensitivity of the steering hasn't been adjusted. Leaving the tunnel brings the bridge and helicopter into view

Ramming your opponents is always good for a laugh (top). The cars slide realistically round corners (middle) and provide stunning views (above) Ridge Racer manages to deliver the richest, most breathtaking 3D graphics seen outside an arcade. The colour resolution of the textures is lower than in the coin-op, and some of the finer detail has been lost, but what more than makes up for these drawbacks is the exceptional frame rate. The game hurtles along at well over 30fps, and retains almost all of the grace and beauty of the coin-op. Occasionally the action jolts slightly when the external perspective is selected and the screen is packed with cars, but this is a rare occurrence.

Unusually for a coin-op driving game, *Ridge Racer* is more a simulation than an out-and-out racer. The arcade machine was a serious attempt at simulating the driving experience (only the second after Atari's clumsy *Hard Drivin'*), to the extent that a full clutch and gearbox were included, and the deluxe coin-op model even featured a real Mazda MX-5, minus engine. It was this attention to detail that won it many admirers beyond the speed-freak fraternity.

Ridge Racer's main failing has always been its lack of different courses. Although this



Here, the replay camera tracks your car's progress at breakneck speed round a bend



Some of the texture mapping is exquisite. Namco isn't afraid of promoting its classics (above)











At the end of each race you're treated to a playback of the last lap. 1 A side view tracks your approach to a dip. 2 The realtime shading never falls to amaze. 3 Take off. 4 Flying past a Cybersled poster at 200kph. 5 The front wheels hit the tarmac first, making the entire car shudder

deficiency can't be ignored, most players will regard it as far less important than the game's positive aspects. The fact is that Ridge Racer is probably the first game of its type to deliver a racing environment which looks truly convincing from inside the car. Electronic Arts' The Need For Speed (Edge 16) is great from outside, but get behind the wheel and memories of Test Drive on the Amiga come flooding back. In Ridge Racer you don't have to suffer a chugging frame rate and a road plotted to only a few feet in front of you. Here, the track unravels beautifully into the distance, giving you ample time to respond. And Namco has even thrown in an extra external view to provide a bit of variety (as well as satisfy Virtua Racing fans).

However, anyone looking to *Ridge Racer* for a lasting challenge is likely to be disappointed. The game is relatively easy to finish, although Namco has included a choice of four cars (12, if you shoot all the Galaxians on loading), each with different handling characteristics. Given the popularity of time trial options in classic SNES racers like *F-Zero* and *Super Mario Kart*, it will be interesting to see how *Ridge Racer's* time-trial element boosts its longterm appeal.

After its half-year journey onto the PlayStation, *Ridge Racer* has managed to fulfil almost all expectations. (To satisfy those who demand a little bit more, Namco maintains

that the game also has a few hidden surprises for players to discover.) This achievement is all the more remarkable when you consider the price of the game in Japan – a mere £37. From the brief but perfect game of *Galaxians* that you can play while the game boots up, to the dazzling graphics and arcade-perfect music and speech, *Ridge Racer* is the killer app that Namco – and Sony – can be proud of. And this is just the beginning...

Edge rating:

Nine out of ten





There's a splendid variety of sweeping Virtua Racing-style views during action replays. The texture-mapped scenery means that sometimes all you want to do is admire the view

EDGE

Like Sony's machine, Sega's Saturn gets off to a magnificent start with a coin-op conversion delivered with real panache. Rarely has the hackneyed phrase 'static screenshots do not do it justice' been so appropriate: you can see every polygon in these characters' make-up, but in motion they look sensational.

Virtua Fighter

Format: Saturn

Publisher: Sega

Developer: AM2

Price: ¥7800 (£50)
Release: Out now (Japan)







After each round in *Virtua Fighter* there's a short replay of the closing seconds of the action, showing the last moves from a different angle



Virtua Fighter's attract mode and post-fight replays give you the chance to admire the superbly designed and animated characters

ot since the marketshaking *Sonic* has Sega had so much depending on the success of one game. The launches of the Mega CD and the 32X

were both just sideshows compared to the launch of the Saturn – the first next-generation machine from one of the big players in the videogames field. As the lukewarm receptions faced by the 3DO, CD-i, CD³² and Jaguar have proved, new hardware needs great software to sell it, so it's no exaggeration to say that *Virtua Fighter* is Sega's most important release for years.

Sega entrusted the Saturn conversion of *Virtua Fighter* to the game's original developers, AM2 (Sega's biggest arcade division). It's easy to see why. Saturn *Virtua Fighter* has all the pulling power of the arcade version, including the swooping, gliding game camera, the stylish polygon characters, the totally convincing animation and the compulsive gameplay.

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The first thing that strikes you about Virtua Fighter is its graphics. They were impressive enough in the original, but on the Saturn, under the kind of intense scrutiny you can never give a game in the arcades, they emerge as simply astounding.

Although the characters (which are all made up of around 1200 polygons) look good in static screenshots, it's the superb animation that brings them to life. The full roster of arcade moves is included in the Saturn version, and every movement is realistically animated and weighted. For instance, Pai, the fastest character, flicks out quick punches that make the heads of opponents snap back. Her 'lightweight' close attacks are also delightfully choreographed - she grabs an opponent and trips them over her outstretched leg or twists their wrist and forces them to the floor.

Conversely, wrestler Jeffrey has several lumbering holds and throws. He moves in, grapples with a character, struggles to hoist them onto his shoulders and then slams them to the ground. It all takes a satisfying few seconds to execute and, in a real show-off touch, Jeffrey even takes time to adjust his hold on an opponent in his arms.

Virtua Fighter's 3D characters have a presence that 2D sprites just can't match.





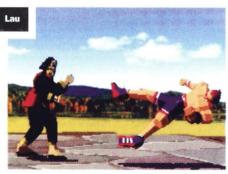


testscreen

A selection of Virtua Fighter's special moves (left to right); Jeffrey picks up another Jeffrey by the nose - press down and punch when in close. Sarah takes out Wolf with a clothesline move - press forwards, forwards then punch. Lau hoists Kage over his shoulders and slams him into the ground - press back, then forwards, then punch when close

The characters really do seem 'alive', whether they're throwing a punch, unleashing a special move or reeling from a blow.

Of course, the action wouldn't be the same without the fluid game camera, which pans about the two fighters, zooming in and out as they move around the arena and occasionally cutting to a new angle. The camera always maintains a position which doesn't

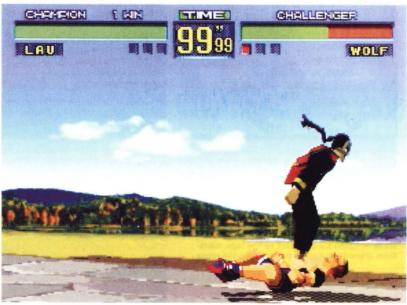






When any fighter knocks an opponent to the ground he can jump in and attack them while they're down. Here, Lau floors Wolf with a punch and (by pressing up and B) leaps in feet first, stomping on his stomach and causing a whole load of damage. (Press B twice while Lau is in the air and he'll jump on his opponent a second time)





testscreen

PROFILE
Name Jacky Bryant
Country America
Age 22
Sex Male
Jlob Indy car racer
Blood Type A
Hobby Training

JACKY



The character selection screen (top). Kage forces Jacky out of the arena to win by 'Ring Out' (above)

disadvantage either player. Only in replays does it switch to more unusual angles (which, annoyingly, often prevent you seeing your finishing moves again).

For all the game's technical innovations, there's an elegant simplicity about *Virtua Fighter*. Unlike Takara's PlayStation title *Toshinden, Virtua Fighter* is basically a 2D beat 'em up with 3D graphics. The characters move on a single axis, with only throws and falls sending them to different parts of the arena. Just like in sprite-based games, they can't circle about each other or attack from the sides (taking them from behind, however, is encouraged).

All the moves are instinctive and the characters are a well-balanced bunch, offering a choice of power, speed or agility, plenty of possible combos and rewarding special attacks. And if you beat the game in oneplayer mode, you face a bonus character, Dural, and bring up a new play option – Ranking mode.

However, in stark contrast to, say, Street Fighter II, everything is controlled with just three buttons: punch: kick and guard. This doesn't compromise the gameplay, though. In fact, it amplifies it. Mastering all the characters' moves – all have at least ten and most have close to 20 – requires less thumb





Beat all eight characters and you face bonus character Dural, a metallic polygon woman

pad dexterity and more button work. The combat is swift, giving the game a steep learning curve which makes it a significant longterm challenge.

The game has just one minor failing – the fact that polygons (which are effectively distorted sprites on the Saturn) occasionally disappear and characters break up in certain action replay views. On the other hand, CD access time is commendably quick and difficulty levels, time limits and controls are all adjustable to suit personal taste.

The Saturn version of *Virtua Fighter* is an exceptional game in many respects. It's arguably the first *true* 'next generation' console game, fusing the best aspects of combat gameplay with groundbreaking animation and gorgeous sound (CD music and clear samples). In the arcades, *Virtua Fighter* made people stop and look. On the Saturn, it will make many people stop, look at their bank balance and then fork out for Sega's new machine. Over to you, Sony.

Edge rating:

Nine out of ten



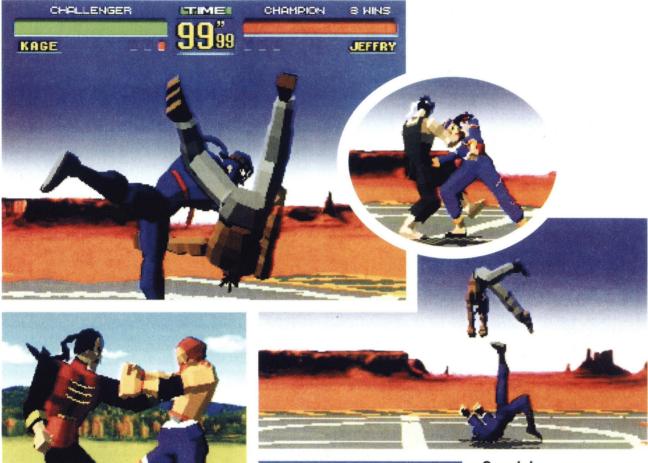
All the characters in *Virtua Fighter* have their share of great-looking special moves, but the most spectacular is Wolf's spinning throw. Get in close, quickly do a semi-circle of the bottom of the pad towards your opponent and press punch. Wolf then steps in, grabs his opponent by the legs, spins them around and tosses them across the arena



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testscreen







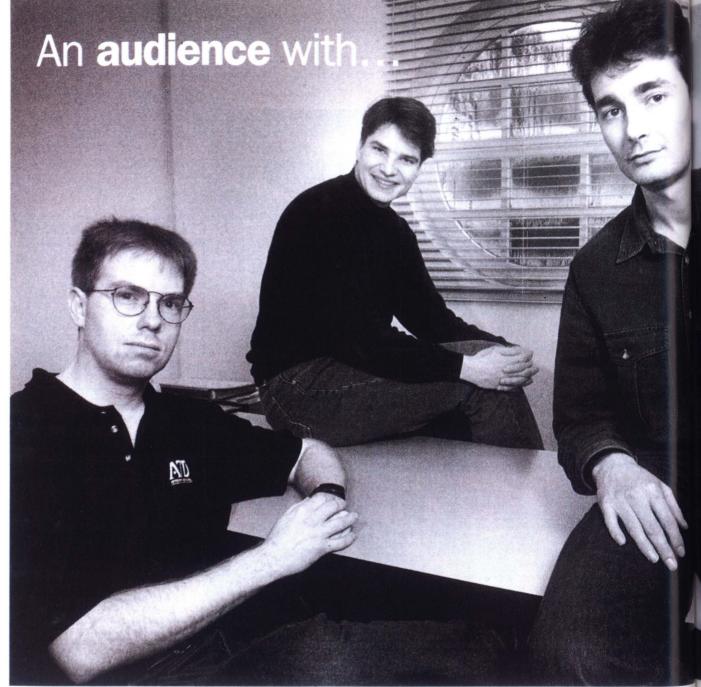


Special moves

Each of the eight *Virtua Fighter* characters has a variety of special moves. Wrestler Wolf has the fewest with just ten – but they're mostly powerful throws and forearm or shoulder charges. Siblings Jacky and Sarah share the same controls and some of the same moves – each has a total of 21. All the characters have throws and flying attacks to hit a fighter who is lying stunned on the ground. And, surprisingly, all the moves are executed with just three buttons – punch, kick and guard – plus the directional pad. The more complex special moves trade speed and ease of use for sheer power.



In the same month as PlayStation and Saturn make their debuts, the mood over at UK codeshop ATD might best be described as 'interesting' as the company continues to work on Atari's Jaguar, having previously worked on Konix's Multisystem. At least Atari has its technology out there in the shops.



Left to right: Jim Torgussen, Martin Green, Chris Gibbs

ATD

How did a virtually unknown British outfit become the first developer for the Atari Jaguar? **Edge** quizzes the creators of *Cybermorph*

interview





'The last year is notable for its unoriginality. If there is one area of originality, it's in network games. That is where original genres will appear. Games played on a network are the most fun'

software for games, arcade machines and business applications. Unfortunately, the first major project to which the team applied its talents was the ill-fated Konix Multisystem. Despite this setback, ATD, although not as high profile as some developers, is involved at the sharp end of games software and hardware, producing arcade machines for Bell Fruit and now games for the Atari laguar.

Based in a business centre built on the ruins of an old stable block in the open fields of Warwickshire, Attention To Detail now employs 21 people, a number which is expected to rise to 30-40 by the beginning of next year, and has just bought another 1000 square feet of space in the building. The company is evidently readying itself for the next generation.

Edge How on Earth did you bounce back from the Konix debacle?

Chris Gibbs That was actually a really good time for us. We were new to the industry, but because we got involved writing the system software, the first game for it and some software tools, we met a lot of developers and made a great number of contacts in a short space of time.

Martin Green In particular we met the people at Flare, and they involved us in a lot of things that they were doing. They introduced us to Bell Fruit, for example. Edge How is the company's workload distributed between the four of you?

Chris There's a fundamental split, first of all, in that Fred and I do all the games side, while Martin and Jim do all the technical side, which involves the electronics and the Windows stuff.

Edge How do you evolve a game design?

Fred Gill All employees are encouraged to submit game designs, which are reviewed by us, and we take it from there. If it's a good design, we'll take it further with the people involved. We've got two or three in at the moment. Chris and I are usually involved in steering those forward. Martin We've had a number of design sessions as well...

Chris Our Pizza Evenings [laughs]. That's really how we work. The new 32bit stuff is original concepts we came up with in brainstorming sessions. We've just taken a scriptwriter on board this month, because

we've got so many ideas kicking around, and the way they're written up and presented needs to be as good as possible, even putting videos together for those that require it.

Martin Publishers are demanding – increasingly because the projects are getting bigger – a higher and higher quality of submission material on design.

Edge You can't just send them a bit of paper any more...

Chris That's right. Not that we ever did send them on the back of envelopes.

Edge What do you think is the likelihood of someone coming up with a good game design on their own these days?

Fred I think that still happens, but it's whether or not they can bring it to market. That's the big shame. You tend to find it's teams of people, not one person any more. PCs are the one place where one person could do that. You can't do it on the Sony, you can't do it on the Saturn.

Martin The other angle on that is, how are people going to get trained? One of the thing we look for when hiring people is a hobbyist background. That's more important, as the enthusiasm for the job is critical. People only get that by having access to computers. The Sinclair Spectrum, for example, gave us an entire generation of programmers.

Edge In the absence of cheap home computers, where are the coders of the future going to come from?

Martin There are more and more people who will have a PC at home. The PC is replacing the traditional home computer in that sense. But maybe the answer is to do a keyboard add-on to the PlayStation, and a hackers' cartridge.

Chris The people that we take on are graduates, although they might not be experienced in game programming, if they're into games as a hobby, then you can turn their skills to that. We haven't got so much of a focus any more on the low-level technical hacking, which is what the Spectrum encouraged. We're looking now at machines where you've already got the power given to you on a plate, and that's like a high-level approach where you don't need to have programmed a game to cope with it. You do need to have this 'what makes a game play well' feeling.

A

ttention To Detail started creating computer games seven years ago, just after its four founders, Martin Green, Chris Gibbs, Fred Gill, and Jim Torgussen,

graduated from Birmingham University. In their final year the quartet did the superlative Atari ST conversion of the Super Sprint arcade machine for Electric Dreams. With a little help from contacts they made during that time, they set up ATD. 'Attention To Detail' was more than just a name; it was a statement of intent.

From the beginning, the emphasis was on technically innovative products. The company has now matured to the stage where it produces both hardware and

interview



Fred It's going to be harder and harder to get your foot in the door, though. We were just talking about producing videos... you can't just produce a paper design, so how does the person on the street do it?

Edge So how did Cybermorph and, later, Battlemorph come about?

Fred It was Flare Technology. They rang us, it must have been three years ago, saying they'd developed this new chip that they wanted somebody to test. They'd done the silicon, and they needed someone to test the functionality. Then it became apparent that it was the Atari Jaguar. Chris At that stage nobody had heard of the Jaguar - it wasn't even a rumour. Fred So we gave them some help debugging the chipset, and some suggestions for instructions that could go into it. Then, since we had that experience, it seemed silly not to be doing a product. Chris They asked us to do some demo software, to show off the chipset, but that soon turned into a requirement to turn it into a game and we put a full proposal together. The brief was to produce something that was very simple, something

you could pick up and you knew what you had to do straight away. And that's what

Edge And so presumably Atari said, 'What about a sequel?'

Chris Well, as always, you come up with a lot of ideas that can't be exploited in the time allowed. Also, as it was the first game produced on the machine, there was a lot of things we found out about the machine that we could exploit again. So we put all that together and we did end up with a solid basis for a sequel, which is now called Battlemorph. The big change in Battlemorph is that you can now fly underground, you can go under the sea, and you can go through tunnels. It's also a CD product, and people don't like sitting there watching loads of sequences when they really want to be playing the game. So this game doesn't actually rely on the CD at all while you're ingame. It doesn't do anything to slow you down.

Edge Do you think that the technology to produce good interactive CD games is still not really there yet?

Fred I don't think it's far off. Quad speed

would be good, double speed is fine, but the industry just hasn't got around to designing CD games that people want. I think people's perception is that on a CD they're going to get lots of graphics. **Edge** And, of course, they feel let down if they don't...

Chris We've got nothing against CD-ROM at all, but you can't make it improve the quality of a shoot 'em up.

Edge What was Atari like to work for?

Chris We've been very happy working for Atari. People make decisions about Atari based on what they see from the outside, but we've been working closely with them, at all levels, and they've given us an awful lot of support. When you say, 'what is it like working for the company?', we translate that into various individuals within the company.

Martin In the past, with other companies we've dealt with, the approach has been when you get to the end of the product, 'Let's have it.' The one thing Atari have been very good at is saying, 'We want the best product.'

Edge What, in your opinion, is the most

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'The trouble with the 3DO is that it's going to suffer from PC-itis. They've got the base machine, but they're already talking about the next generation. So which one are you developing for?'

original game released over the past year?

Chris I think it's fair to say that there hasn't been a lot of original stuff in this last year. I think the last year is notable for its unoriginality. If there is one area of originality, it's in network games. Games played on a network are the most fun. That, I think, is the area where original game genres will appear. In fact, the next electronics project we're working on is about network games. I can't really say more about that at the moment.

Edge How would you like to improve the software industry?

Fred One common platform would be useful. It's a pain to develop for four platforms at once. It would help you concentrate on product rather than technical difficulties.

Martin If you could get to a point, and it might happen within three or four years, where you could program at a level which was somehow slightly abstracted from the hardware. Then you could have your polygon models, and you'd model them at some high resolution, and it would display them at lower resolutions depending on how good the machine was.

Fred I think the thing that 3DO tried to do was quite interesting, trying to get one machine accepted by several people. The trouble is that it's going to suffer from PC-itis, as it were. They've got the base machine, which is good, but they're already talking about the next generation. So which one are your developing your software for?

Edge So the machine has to be downwardly compatible, at least in theory?

Fred That's the problem: somebody's going to have the base-level machine. They can't afford to upgrade but they still want the latest software. The new machines are interesting, though, because of coding in *C. C.* helps a little bit in unifying them. It's a third of the speed of hard-coded assembler, but it's portable.

Edge Is virtual reality a dead end?

Martin No. But I get motion sickness on Doom, so...

Fred I haven't played any VR for a year or so now, but it was crap then.

Chris I've played VR games two or three times, and I've thought, I could really get into this... if it looked good.

Martin I think the main problem is

technology. And I have my doubts about the social aspect of it. It could get messy. It could get disturbing.

Edge Is doing hardware more risky than producing software?

Chris A hardware component has a functionality of x, y and z, and it's known that is going to be wanted in the market. As long as your design is sound. With a game there's a lot more risk, because you don't know if it's going to play well. With a piece of hardware you know what it's supposed to be doing.

Fred But that said, it's generally easier to tweak software than hardware.

Martin The reason we've been able to get into hardware at all is because we're using a type of chip that is self-programmable. So we don't go the full ASIC route. And what we've done is a process of downloading it into a chip, testing it and it works.

Edge Are arcade machines slipping because of the new consoles?

Martin It's true to say that this new generation of games machines is the first generation of 'hardware designed' games machines. Everything else before that has been really pretty simplistic. The skills you see in the design of processors are an order of magnitude greater in complexity than the skills you see in the design of these arcade machines.

Edge Older consoles were just a processor and a bit of I/O stuff...

Martin Yes. The investment in hardware was minimal. Now they're finally having to figure out what it takes to write a game.

Edge When the company gets so large that it doesn't need you to run it any more, what would you like to do?

Jim Torgussen I've always wanted to direct films, but I don't know if I would actually do it.

Chris Personally, I'd like to create a comic book. I'd like to take a year out and go to an island somewhere and create characters all day.

Fred I think I'd probably write novels. I'd still have to be involved in something creative. It would take me forever, though.

Martin If there were capital around I'd like to do some sort of leading-edge research. But there are so many people doing the same thing that trying to find an area of any originality would be difficult.











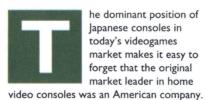
In issue 18's cover story: a fresh-faced Jeff Minter and his place in the increasingly messy-looking Atari puzzle; how games such as Daytona USA and Virtua Fighter may soon appear on a Jaguar near you; and Darryl Still surely getting it the wrong way around when he calls Nintendo East 17 and Sega Take That.



EDGE

magazine March 1995

The oldest videogames company of them all once held an entire industry in its grasp. And then it threw it all away. So why is Atari now back in the running?



Atari arrived on the scene 15 years. ago. Given that at the beginning it had a clear field, you would have thought that it would still be a major force. Not so. Atari is a company that still exists almost despite

itself. During the 1970s it was the equivalent of Nintendo, conquering the world with its VCS 2600 console. Somewhere along the line, though, it lost the plot. Thanks to some disastrous marketing decisions, the company changed hands, moved from console to computer development, made plenty of money off the back of the ST range and then lost millions fighting Commodore. Now it has re-entered the console market with its 64bit Jaguar machine, has been involved in a













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MATARI

















Atari hardware: 1 The VCS, Atari's first venture into home entertainment. 2 The 7800, released at about the same time the bubble burst. 3 The 800XL, second in Atari's first range of home computers. 4 The first real ST, the STFM. 5 Its successor, the STE, featuring a blitter. 6 The STacey, a portable machine devoted to music applications. 7 The Mega STE, featuring 1Mb of memory (and a pretty box). 8 The TT, which made memory (and a pretty box). 8 The TT, which made a break with the regular ST but was still compatible with it. 9 The Falcon, which, among other enhancements, brought 32bit TrueColour to our screens. 10 The Lynx, a handheld colour cart-driven gaming diversion. 11 The STBook, marketed simply as a portable ST. 12 The STPad, Atari's ill-fated handwriting-recognition tool 13 The latest machine, the Jaguar



very interesting court case with Sega and has decided to settle some old scores.

The list of Atari

alumni is like a who's who of the computer and console industry. So many leading industry figures have been involved in the firm at one stage or another that a history of the company reads like a history of videogames themselves.

Atari was founded in 1968 by a University Of California engineering graduate called Nolan Bushnell. He had become interested in computer games during his time at college, where he played one of the very first, a primitive creation called Space War. So taken was he by this game that he decided to produce a version for himself, and so the very first arcade game, Computer War, was born. He took the design to a pinball company, which manufactured it. It bombed, big time.

Unperturbed, Bushnell decided to produce a simpler product. After some thought, he designed an uncomplicated tennis game which he called Pong. He built a prototype and, in 1972, after a successful trial of the machine, set up his own production line. Having scraped some cash together from friends, relatives and the bank, he employed a group of techno-hippies (Steve Jobs and Steve Wozniak of Apple fame among them), who fought to keep up with demand.

In those early days, Atari was breaking new ground. It released the first car racing game, called Gran Trak, and the first tank game, named (somewhat obscurely) Tank, which was also the first arcade game to store its graphics data on ROM. Shortly

after the success of these machines, Atari released Breakout, a game that still gets released on new formats today.

By 1973, the company had 80 employees and Bushnell was looking for ways to fund new growth. He'd seen the potential that videogames had, but the company lacked the finances to exploit it. As a result, he sold the rights to Pong to Bally, the pinball company, which went on to sell thousands more units all over the world. With this cash injection the Atari engineers created Sprint, the first arcade machine to use a CPU to control the game.

What Bushnell really wanted, though, was a machine that could be used at home. He realised that although arcade games would always be popular, there was a massive domestic market just waiting to be tapped. It was with this in mind that he created the Atari VCS 2600 console. Its compact design, custom chips and sophisticated sound and graphics made it an instant hit when it was released in 1976 - the same people who played Atari games in the arcades could, for the first time, play them at home as well.

Around 1976, however, things started going wrong at Atari. The company had overstretched itself, particularly with the development of the Atari 800 computer, and so Bushnell sold the company to the huge media conglomerate Time Warner for over 20 million dollars. He couldn't let go completely, though, and remained with the firm as chairman.

At that time Atari adopted an attitude which was to be copied in the late '80s by the Japanese console companies. The only competitor to the Atari 800 was the Apple II that Jobs and Wozniak had created in their garage. While the Apple was an 'open'



Atari acolyte Jeff Minter is possibly the strongest ally the Jaguar has. Its success will be due in no small part to his efforts

system, Atari threatened to sue anyone who developed software for its machine, because it figured, correctly, that revenue came from software and not hardware sales. So although groundbreaking products like Visi-Calc (the very first spreadsheet) were being created for the Apple, the Atari 800 suffered from a dearth of software.

In 1978, after an acrimonious dispute with Time Warner, Bushnell left Atari with a healthy golden handshake. After the dust settled, the company forged ahead with sales of its VCS and (for a while) it was unbeatable. By 1981 over 20 million consoles had been sold and the arcade market had grown in just eight years to a value of six billion dollars. Anyone with a stake in such a lucrative market could be forgiven for becoming complacent.

In those $_{\mbox{\scriptsize early days, everyone}}$ believed that the console market was untouchable. It had emerged from absolutely nowhere to become the single largest component of the toy sector. All the traditional toy companies had

'They failed because they thought their competition was Commodore, when it was actually

Nintendo

'If Nintendo and Sega are

East 17 and Take That respectively, then we're the Rolling Stones.

We might be the oldest kids on the block, but we're still

'There are too many machines in the marketplace.

Atari



scrambled to jump onboard, providing plenty of rivals for Atari. But what happened next had more to do with poor planning than the

amount of competition in the field.

In 1983, the console market had reached saturation point. Everyone who wanted a home videogame system had bought one, and yet companies like Atari carried on churning out units. At one point, it was even producing more games cartridges than there were machines to play them on. It assumed that all it had to do was release the games and the public would snap them up. But as many companies have discovered, public taste can't be taken for granted.

Every market has to keep the customer interested. Car companies release a range of models at a variety of prices. The music industry constantly offers up new talent for public consumption to keep the market moving. In its naivety and arrogance, the American videogames industry ignored these hard-learned lessons and in late 1983 the videogames market suffered a disastrous slump.

It was at this time in 1983 that Atari made a judgement that probably still gives executives nightmares. It was approached by a Japanese designer from a then little-known company called Nintendo and offered the worldwide rights to the Famicom console. Hiroshi Yamauchi figured that because Atari already had a worldwide distribution network, it would be the perfect company to set up a global release for his machine. In its wisdom, Atari blew the Japanese company out, and so Nintendo set about the task of worldwide domination on its own.

In that year Atari made a loss of \$536 million. Time Warner couldn't cope with such a massive drain on its funds and scrambled to sell as quickly as it could. The computer and videogames divisions were sold to Jack Tramiel, the man who had been ousted from Commodore, the company he founded. The coin-op division, Atari Games, was sold to Masaya Nakamara at Namco. Time Warner was reluctant to burn its bridges, though, and cleverly hung on to a 25% stake in Atari and a 40% stake in Atari Games. While Tramiel plotted to beat Apple and Commodore at their own game, Nintendo was hatching plans to rekindle the console market with the help of a plumber.

The 2600 was still the only console that counted when the Tramiels bought Atari. All they had to do was come up with a replacement for the ageing machine and

a replacement for the ageing machine and some decent software to play on it. At this stage they must have known that the 800 stood no chance against the Apple and the IBM PC. This is undoubtedly the point at which Sam Tramiel (the newly appointed president) told his engineers to come up with a completely new machine.

Atari released follow-ups to the 2600, in the form of the 7000 series, but these bombed in the face of the new Nintendo machine. Atari wasn't at all happy with the success of Nintendo; it didn't like the way that Nintendo had a stranglehold on who produced cartridges for its system and launched a lawsuit against the company alleging that the practice violated American antitrust laws.

By 1986 Atari had designed its first 16bit computer, the ST. Everyone



Two generations of the Tramiel family have directed the fate of Atari. Sam (left) and his father Jack, all smiles at the Jaguar launch

immediately thought that 'ST' stood for Sam Tramiel, but he insists that it's an acronym for Sixteen Thirty-Two (the system's internal architecture). The first machine had 256K of RAM, an external 3.5" drive and a brand-new 'desktop' navigated using a mouse. It was released about a year before the Commodore Amiga, the machine that proved to be the ST's bitter rival. The irony was that Atari invested startup capital in the Amiga when it was still a pipedream, but when it was offered the machine it turned it down in favour of its own ST.

Initially lots of publishers released products for the ST. Atari authorised

'I think that Atari's only real **aspiration** can only be to stay in the game, and though they wouldn't **admit it,** even the management know that.

If they could earn a half decent market share

the Tramiel family would be dancing a



'That's **true** up to a point, in that our immediate **ambition**

is to be seen to be part of the game. But we eventually aim to be number

two or three'

Bob Gleadow Vice President Atan Europe

EDGE magazine March 1995

conversions of its popular arcade games, and with titles like *Sprint* and *Gauntlet* behind it, sales were buoyant. At this stage, Atari must have figured that the Amiga would never touch it. Although it was technically superior, it was much more expensive and was being marketed as a business machine. In 1989, Atari launched the 520 ST, with an internal 3.5" floppy disk drive, 520K of RAM and a midi port. STs walked off the shelves.

By 1989, thanks mainly to the release of the A500 for the home market, the public was becoming aware that the Amiga was an exceptionally powerful machine. Games like Defender Of The Crown were left running in shops, and punters were amazed at the sampled sounds. But still the ST kept the lead. Its head start meant that it had the largest range of software, and it still cost less than the Amiga. But by 1990 the remodelled Amiga 500, rather than the ST, was becoming the 'must have' machine.

Home computers had now become the most popular games medium in Europe. Although consoles were strong in America (the Famicom that Atari could have owned was renamed the Nintendo Entertainment System and launched worldwide, and Sega introduced its Master System), the Europeans bought more and more home computers, particularly the ST. In 1990 the British market was split down the middle between the Amiga and the ST – nobody wanted a console.

In 1991 the Amiga started outselling the ST. The software houses were quick to switch allegiance. Games started appearing on the Amiga first and the ST second. This was despite the release of the STe, an upgraded Atari machine featuring a 4096-colour palette. The extra 'e' didn't fool

anyone, though: the ST range still couldn't touch the Amiga's technical specifications.

It was in early 1992 that rumours of a new system, the Falcon, emerged. By this time the Amiga was way ahead of the ST range in terms of both software and value for money, so loyal Atari owners hoped that the new machine would give Commodore a bloody nose. It wasn't to be. The Falcon was launched in autumn '92 but wasn't released in any volume until '93. After taking a deep breath, the computerbuying public decided to stick with the Amiga. The Falcon sold, but in relatively paltry numbers and mainly to 'hobbyists'. Meanwhile, the well-oiled Atari rumour factory, churned out a singularly unbelievable nugget: there was a 64bit console on the way. That year Atari Corporation posted losses of \$76.3 million.

Where America goes,

Europe tends to follow. The 8bit Nintendo and Sega consoles had been doing exceptionally brisk business in the US during the late '80s, and by 1991 the Super Famicom and Master System were big news. The 16bit console market exploded in 1991, and the shockwaves reverberated through Europe.

At this point Atari started developing its own console. It had been beaten by Commodore in the home computer market and so it made sense for it to return to a marketplace it knew well. In 1992 the new 16bit consoles went global, turning Nintendo and Sega into fabulously profitable companies with the financial clout to crush anyone who threatened their dominance. Although the Falcon continued to sell in minimal amounts



Richard Miller, vice president of engineering at Atari US, was instrumental in developing the Jaguar's 64bit technology

(through specialist computer shops), Atari's handheld Lynx bombed, despite being the most powerful machine on the market.

By 1993, the popularity of the ST and Falcon had crumbled almost completely. Atari was now on the ropes. Its machines had zero credibility and it was losing money hand over fist. Things could only get better.

Atari unveiled the Jaguar in August 1993 at the Chicago Consumer Entertainment Show, to general acclaim. 150 developers were sufficiently impressed to sign up for production rights by the end of 1993. Richard Miller, Atari's English technical wizard, had invented a brilliant chipset that was capable of chucking

'We are extremely **pleased** with this relationship which has potential longterm benefits for both companies'

'We at Atari are very **pleased** with this new affiliation.

The increased **Cash** position will be used to **enhance**

our marketing position this fall'

Sam Tramiel, Atan

'We've got \$125 million cash to spend'

Atari



polygons around a screen quicker than anything else. The press also thought the machine was great, but was sceptical about its future. In

1993 Atari's losses were \$48.9 million.

Jeff Minter has always been a fan of Atari hardware. Ever since the days of the Atari 800 he has been churning out psychedelic games full of llamas, sheep and toilets. In June 1994 he unveiled his Tempest 2000 Jaguar cartridge, to universal acclaim. This one game probably did more for Atari's reputation than anything the company's marketing team had managed in the last five years. Admittedly, Atari gave Minter a great deal of creative freedom, but the fact remains that Tempest 2000 forced everyone to start considering Jaguar as a contender.

Whether by accident or design, the Jaguar was released at the perfect moment. During 1994, sales of SNES and Mega Drive cartridges had been falling. The console kids wanted something new, something better, something quicker. Sega released its Mega Drive add-on, the 32X, and announced the Saturn. Nintendo revealed the Ultra 64 and Sony unveiled the PlayStation project. But the Jaguar was there, in the shops and there were even a few good games available for it. But although the machine sold steadily in the States, it failed to cause a revolution. Atari's position was still precarious.

Then Sega entered the picture. In 1990, in one of the most momentous events in its history, Atari took Sega to court in America for infringement of some of its patents. This was all down to Nolan

Bushnell. Bushnell was a very canny businessman who, during the five years he was at the helm of Atari, had paid very good lawyers very good money to patent everything that the hardware and software teams invented, in order to prevent anyone ripping off any of Atari's innovations (a practice that was continued by Time Warner). When the Tramiels bought Atari, they were obviously more concerned with getting the company running smoothly than pursuing patent infringements, but, sometime in 1988, they decided to unleash the lawyers.

In late 1994, Sega settled out of court for \$50 million cash and \$40 million stock in Atari. Why did it cave in? Sega ostensibly fell foul of Atari's nine-pin joystick patent, but this alone wouldn't account for the amount of money involved. Many people in the games industry believe that Atari's patents are so all-encompassing that they effectively give it copyright on a whole range of videogames. It's possible, for example, that Atari owns the concept of sprites that move off the left of the screen and appear on the right - in other words, scrolling backdrops. And this is just one of over 70 Atari patents, all of which are thought to be pretty airtight. So it's no wonder that Sega opted to avoid a potentially disastrous judgement against it and throw in its lot with Atari.

A press release issued by Sega after the negotiations revealed the ramifications of the case: 'The two companies have entered into a software licence agreement for a specified number of games that would be made available on each company's present and future platforms.' So Atari has

. the option to release Sega games, and vice versa – Jaguar owners should soon see titles like the Virtua series and Daytona on their machine (but, as Bob Gleadow, vice president of Atari Europe, told Edge, 'The line stops at Sonic').

And it doesn't end with Sega. Atari is now gunning for other big hardware and software manufacturers - or, as an Atari source put it, 'Everyone who can afford to pay us' - and will be looking to companies like Sony and 3DO for compensation. It has already gone the distance with one Japanese giant, so it's not unfeasible that it will do it again. If other companies do settle in the same way as Sega has and invest money in Atari, then by the year 2000 there will be a large number of hardware and software outfits with a vested interest in seeing the Jaguar succeed. Atari had better get its skates on, though, because some of the patents only have another seven years to run.

Atari is fighting hard to regain credibility. Now that it has cast off its lacklustre computers and is focusing on the Jaguar, its future is looking rosier than it has for some years. It recently announced that its console would be distributed in the heart of the games industry, Japan. It has tied up a VR headset deal; it has a new Jaguar CD all-in-one ready for release in 1995; and work has started on a laguar 3 for release in 1996/7. And, of course, there are those handy patents knocking about. More impressively, there's some decent software coming out for the machine most notably Mortal Kombat 3 (which has been licensed directly from Williams), plus the Virtua series, Daytona and Defender (coded by leff Minter). Atari might just surprise us all yet.

Forthcoming Jaguar hardware

tari feels that '95 is the Jaguar's year, and a series of add-ons for the machine is to be released in the coming 12 months. The Jaguar 2 which has been much talked about in the press is actually the codename for the CD add-on (the 'toilet'), which will be released in February 1995 in the States. Of more interest is the all-in-one Jaguar/CD unit, which will be released in summer/autumn '95 for about £349, and will include the Jaguar hardware (slightly tweaked to run faster and cope with direct CD access) plus the CD unit. At about the same time, the company will release a series of connectability products. America (where local telephone calls are free) will get a Jaguar modem, while the UK will get a serial lead enabling Jaguars to be connected directly together. In summer 1995 an add-on called the Catbox is scheduled. This will operate as a sort of junction box between Jaguars, allowing the kind of multiplayer gaming previously only found on networks. And thanks to a recent deal with Virtuality, Atari will release a VR headset around Christmas '95 in the US, at a projected cost of \$200. Developers are already working on conversions of arcade games for the unit.



The long-awaited CD add-on for the Jaguar is just the first in a long line of planned peripherals, including modem, link-up lead and VR headset

1995

As Atari prepares for a brighter future, **Edge** talks to the company's president,

'The Saturn is too

expensive and

Nintendo doesn't

even have a product

yet. All Nintendo is

doing is trying to

confuse the market

with disinformation'

Sam Tramiel

dge Is it fair to say that Atari produces excellent products which suffer due to a poor public image?

Sam Tramiel We do make excellent products. We have made mistakes in the market, and some of the circumstances in the computer market just made it impossible to compete. The Jaguar will get proper marketing support and we and others are working hard to deliver great software. I'm sure that whatever poor image exists will change.

Edge Atari has shifted its emphasis from computers to consoles. Is this permanent?

ST Around the end of 1989, Atari decided that the computer hardware business was too cut-throat and a proprietary system could not succeed in the long run against the IBM/Intel juggernaut – just look what happened to Commodore. We decided to focus on the interactive entertainment market. If the business opportunities exist

for us to get back into the computer business, we will. We feel that the Jaguar has a great future and is a very exciting platform at a great price.

Edge But why launch a console now, when everyone else seems to be moving into multimedia hardware?

ST The console approach enables us to have a low-price starting platform and gives the user the

chance to add peripherals as he can afford them. The future peripherals will be a CD player, a voice modem, a VR headset and something else I can't reveal. The other new platforms are just too expensive for the consumer and this has been proven by the failure of Commodore's CDTV and the CD-i players. We are focusing much of our energy now on the multimedia software that will make Jaguar a success.

Edge Is it true that the Jaguar is a make or break product for Atari?

ST The Jaguar is not a make or break product but it is what we are focusing on. We are also going into the publishing business for PC CD-ROM and perhaps others as well, with another brand name. Edge Do you think Atari can compete with the giants of the console market, like Sega, Nintendo, 3DO and Sony?

ST Atari invented the videogame business and during the late '70s and early '80s was the dominant company. The industry has been through a number of cycles and we are now entering the fourth cycle. Cycle two was dominated by the NES, cycle three has been shared by Sega and Nintendo and we at Atari have put a lot of effort into assuring the success of the Jaguar in cycle four. The Saturn is too expensive and Nintendo doesn't even have a product yet. All Nintendo is doing is trying to confuse the market with disinformation. The 3DO group has doubled the royalty to the software community and the hardware manufacturers aren't happy. The Sony product is just too expensive to be taken seriously and I can't see Sony focusing on a product that won't have the quantities due to the high price. It will be a player, but not a big one.

Edge But the Jaguar is going to be in direct competition with a lot of heavily backed

machines. Does Atari really stand a chance? ST We have some very compelling advantages in terms of power, low price and lots of good software, with more on the way. We have a very experienced team. We also have the financing. Also important is our strategic investor, Time Warner, and our new partner, Sega, which gives us another source of good software.

Edge How much input does Time Warner have in Atari? Does it provide include monetary help beyond its obligations as a large shareholder?

ST Time Warner has no official input into Atari but we do talk to many of the Time Warner divisions and we value our relationship with them. For example, we were chosen to be included in the Time Warner Cable Full Service Network test in Orlando, Florida. We got a licence from Warner Brothers for the big Batman Forever movie, which is coming out next year. We also work closely with Time Warner Interactive and you'll see them publishing many titles on Jaguar in the near future. We have no need for more money at this time. but if we did have a good reason to raise more. Time Warner could be an option. Edge Why has it taken Atari so long to pursue patent infringements? Why didn't



Sam Tramiel, president of Atari: 'Focusing much of our energy on the multimedia software that will make Jaguar a success'

you go after Sega and Nintendo when you bought Atari from Time Warner?

ST The issue of patents is very complex and we pursued the issues as soon as it was prudent to do so.

Edge Are you going to pursue Nintendo, 3DO, Sony and the other console manufacturers in a similar manner?

ST On the issue of patents I can only say that we will maximise their value and will pursue whatever means are necessary to ensure that they are not being infringed upon. We have some precedents and we look forward to more favourable outcomes.

Edge The Sega deal means that you can release any of its titles (excluding *Sonic*) on the Jaguar. What Sega titles are going to appear on the machine?

ST We haven't decided yet.

Edge Are we likely to see Nintendo games on the Jaguar?

ST Our relationship is not so great with Nintendo, but who knows what is possible in this time of détente?

Edge Europe has traditionally been a very strong marketplace for Atari product, but it's America and Japan that ensure a console's longterm future. What steps are you taking to sell Jaguar in these areas? ST We have chosen to make the US the first important market for the Jaguar. It is starting to work. We just introduced the

starting to work. We just introduced the Jaguar into Japan and met over 60 thirdparty developers in Tokyo. It will not be easy selling a US-made machine in Japan, but we are going to try.

Edge In his book, Game Over, David Sheff alleges that Jack Tramiel imagined a sweet revenge on Commodore for the way in which he was ousted from the company. If this is true, is he happy now?

ST We did not buy Atari as a road to exact revenge on Commodore. It was a good opportunity to acquire the best-known name in videogames and start a new venture.

Edge Is it true that Atari is considering buying the shattered Commodore company? ST We aren't happy about the demise of Commodore and have no plans to acquire

the leftovers. **Edge** Finally, what do you think the future holds for Atari?

ST Success.

ED G C

The inclusion of weapons, proper backgrounds and texture-mapped details mark out Takara's first PlayStation game as something more than a Virtua Fighter clone, although actually playing the game reveals it to be a less satisfactory experience, with little of the depth offered by Sega's beat 'em up.

Toh Shin Den

Format: PlayStation

Publisher: Takara

Developer: Tamsoft **Price:** ¥5800 (£35)

Release: Out now (Japan)

ntil now, there has been no real basis for a direct comparison between Sega's Saturn and Sony's PlayStation. But with the

arrival of Takara's *Toh Shin*Den, anyone who still

believes that Sega holds the upper hand in the hardware wars would be hard pushed to argue their case.

Toh Shin Den is simply gorgeous. And whereas Motor Toon GP takes Gouraud shading to its gaudy extreme, Toh Shin Den employs all of the graphical tricks at its disposal in measured amounts; the result is impressive, yet easy on the eye.

Of course, it could be argued that *Virtua Fighter* is supposed to be a reasonable facsimile of its coin-op parent, and so has no chance to show off the Saturn's real power. But it takes something of a leap of faith to believe that the Saturn could replicate *Toh*





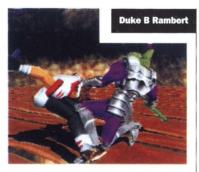
Toh Shin Den dispenses with gentlemanly fisticuffs in favour of large, pointed weapons

Shin Den with any degree of accuracy. In fact, the converse seems to be true: while we have yet to see how the Saturn handles the graphical excesses of Virtua Fighter 2, there is no doubt that Sony's machine could cope quite admirably.





This armoured giant from France is slow and lacks fireball attacks. However, he can perform some fierce charging/jumping attacks (right, top and middle). He also grabs his opponent and smacks their face into his knee (top), and has a two-handed sword which extends to make long distance contact (right)

















This Japanese warrior's favoured weapon is the ceremonial nihontoh sword. Among his arsenal of special moves are a flaming flying kick (above), fireball (top), and a useful sliding kick (middle). However, his killer move is a flaming shoulder charge (left) which is followed by a vertical, spinning leap

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One area in which Saturn Virtua Fighter does have the edge is in animation. The motion-captured antics of VF's combatants are uncannily authentic – especially Lau's high jump onto his downed opponent's chest, which is just plain spooky. Toh Shin Den's characters perform with similar fluidity but their movements aren't as realistic or dramatic; their actions look like the product of talented animators rather than the stored motion patterns of real humans.

Then again, Tamsoft's proprietary 'Hyper Solid' 3D modelling system, leaves little room for glitches and gaps – unlike Sega's offering, which tends to leave its fighters with transparent torsos and flickering limbs, especially during replays.

But, visuals aside, how does Takara's eye-feast play? Certainly, it follows the well-worn template of previous beat 'em ups, with the now-standard system of kick, punch, jump, crouch and convoluted special attacks, so no marks for originality there.

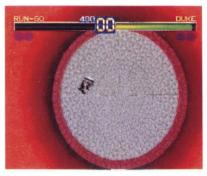
Similarly, the addition of weapons merely throws a hint of *Samurai Shodown* into the proceedings and eliminates much of the close-quarters combat. The many spectacular throws which featured so prominently in *Virtua Fighter* are missing from Takara's beat em up, to the detriment of the gameplay.

And once the moves become familiar, there's a frustrating lack of response. *Toh Shin Den*'s fighters take an *age* to get back up from a fall, and once up there's an annoying time lag before the next attack can be performed.









Four views are available: Normal (top left); Overhead (top right); Long (bottom left) and Sky (bottom right). A user-definable perspective would have been preferable – and more useful





The former circus dancer's dainty stance belies her mastery of the dirk. Her moves include a flying dive (above), sliding knife attack (top) and mid-air somersault kick (bottom). Ellis can also jump over her opponent and drop-kick them in the back – shown here by Ellis in red vs Ellis in white (right)

















This wizened Chinese wizard is armed with iron claws on either arm, with which he can skewer and throw his opponents (top). His flying kick (above) is supplemented by huge magical fireballs, which he can unleash in mid-air (middle), on the ground (left) or underneath himself which he rolls along on

testscreen









The ultimate adversary in *Toh Shin Den* is a fireball-hurling giant called Gaia. The final conflict takes place *inside* a revolving torus on a transparent platform. And the effect is awesome

It also has to be said that *Toh Shin Den* has no genuinely innovative moves; the odd face-slapping and headbutt, but nothing really unusual. It's almost as if Japanese designers are scared of adding anything excessively different for fear of alienating a captive audience. Let's face it, the beat 'em up hasn't really progressed much since the original *Street Fighter II* stepped into the arena.

Toh Shin Den even takes something of a retrograde step in removing the need to learn and perform the special moves – there are at least two moves initiated directly from the front finger buttons. None of that 'left, diagonally down, down, fire' malarky – simply press and go. And although this does make the game more instantly accessible, beat 'em up purists will no doubt prefer to remove the option in favour of relying on joypad prowess under pressure.

The upshot of all this is that, to be honest, *Toh Shin Den* is a distressingly ordinary beat 'em up, given the current state of the art of the genre and the power of the host machine. But, like many games, *Toh Shin Den* is more than the sum of its parts. The abundant combat action is complemented by outstanding aesthetics, making it more of an experience to play than the usual 2D fare and even nudging *Virtua Fighter* into the shade – presumably to Sega's intense chagrin.

The solidity and believability of the visuals adds enormously to the whole spectacle and make it a great deal more enjoyable to play. The scenery is a delight to behold (another advantage over *Virtua Fighter*'s plain backdrops) and the only real disappointment is the sound, which often lapses into ill-fitting oriental muzak.

But in the final analysis *Virtua Fighter* just pips it. Sega's unmatched coin-op heritage has bestowed on the Saturn game a level of playability that the new contender can't quite match. The hands-on action, the speed, the range of moves and the glorious animation put *Virtua Fighter* just ahead of *Toh Shin Den* on points.

Edge rating:

Eight out of ten





extensively employed to avoid attacks (main). Kayin's arena (above) features a video wall which actually shows the battle taking place (and even the screen itself!). Most moves are accompanied by tiny explosions, which often obscure the action taking place

EDGE

magazine March 1995





The offspring of a Scottish/Japanese alliance, Kayin brandishes a claymore and is well versed in martial arts. He is one of the few fighters who can perform a throw (above). Other moves include a fireball, a semicircular kick (top), a mid-air somersault kick (middle) and his special charging attack, the 'Deadly Ray'

















Mondo is one of Toh Shin Den's most impressive characters, wielding a huge spear to great effect (top). As well as using it to launch fireballs in mid-air (above), Mondo can whirl his weapon in front of him like a propeller (middle). Similar to Duke's sword, Mondo's spear mystically grows to increase his reach (left)



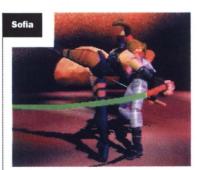


This mace-wielding American is a lumbering giant with a surprising turn of speed. His array of moves are fairly typical. He can produce a wall of fire (top), perform a massive jump (middle, captured here during takeoff) and slamming the mace down elicits a fireball. However, anyone venturing a little too close may well be the victim of a severe nut-dropping (above)

















This ex-KGB agent is fast but has a limited number of moves. The most harm-inducing is her whip pirouette (top), which lashes her adversary. She can also unleash fireballs (middle) and rapidly flail the whip in front of her (left). Her funniest (if not most useful) attack is the dreaded face-slap (above), in which she grabs her opponent by the collar and gives them a good thwacking

EDGE

Though beat 'em ups have begun to embrace the third dimension, platform games aren't yet ready to deviate from the beaten 2D path: Clockwork Knight's environments look more solid than those that have gone before, but they are mere background details. The race is on to create something with a true 3D vision.

Clockwork Knight Pepperouchau's Adventure

Format: Sega Saturn

Publisher: Sega

Developer: In-house

Price: Import (call)
Release: Out now (Jap)











The SGI-rendered intro sequence follows Pepperouchau's bumbled efforts to win Chelsea's heart. Things soon go horribly wrong...



Although Pepperouchau can't move into the screen, many of the nasties, such as this boxing glove, can

nyone familiar with John Lassater's award-winning computer-generated animations will immediately feel at home with *Clockwork Knight*. The characters, and indeed the whole theme of the game, bear a remarkable resemblance to Tin Toy, arguably Lassater's finest work to date.

This source of inspiration is particularly obvious in *Clockwork Knight*'s memorable two-minute animated intro. Set in a child's playroom, the sequence chronicles the events that take place when the cuckoo clock strikes midnight and the toys, predictably, come to life. Not only have Sega's Silicon Graphics staff done a remarkable job in rendering the characters, but they've also created something that works as an entertaining animated short in its own right.

But although the quality of the original animation can't be faulted, the Saturn's limited video capability means that the overall impact is ultimately rather unsatisfactory. The sequence has a grainy, almost 3D0-ish feel, with a disappointingly low colour resolution.

You need to see Clockwork Knight in motion to fully appreciate its graphics. This giraffe looks incredibly solid as you manoeuvre around it

The ingame graphics, however, go a long way towards making up for this. The hero, Pepperouchau, exudes charm, and the cast of co-stars sparkles with all manner of delightful touches. The boss characters are particularly worthy of mention – it's fair to say that end-of-level guardians have never impressed as much as *Clockwork Knight*'s. One, a Transformers lookalike, initially takes the form of a giant, stomping robot, but after several hits it mutates into a jet fighter and whisks off into the background, banking and diving in 3D, before returning to strafe you.

But Clockwork Knight also suffers unexpectedly from a classic console flaw. In a later section of the game, Pepperouchau



Run away from boss characters and the game camera zooms out with incredible fluidity

comes up against nasties in the form of sticks of dynamite. Get too close and they self-ignite, resulting in a natty little explosion but also an ugly dose of sprite flicker – a side effect that can probably be attributed to sloppy sprite masking. This is not a major failing, but it shows that the next-generation machines, when loosely programmed, are still susceptible to technical slip-ups that many buyers will have assumed were a thing of the past.

Clockwork Knight's backgrounds have been the object of avid interest since Sega first unveiled the unique 3D styling technique used for the game. The finished effect is nothing short of dazzling, with the bitmapped 3D obstacles in Pepperouchau's path conveying a wonderful solidity and depth, and textured surfaces now moving in unprecedented parallax. Surfaces are made even more





The first boss takes the form of a sinister boy doll (top). The bonus game offers extra lives and tokens as prizes (above). Pepperouchau meets another clockwork-operated toy (right)



Because later bosses are constructed from texture-mapped polygons, the Saturn is able to manipulate them with relative ease. This giant transforming robot is a perfect example

realistic by grain effects on wooden panelling and shiny metallic finishes on kitchen fixtures.

But, unfortunately, it looks as if Sega has lavished so much care and attention on the game's visuals that there was little left over for the gameplay. For the most part, *Clockwork Knight* is a fairly routine platform game. Strip away its undeniable visual sheen and there's nothing that pushes the genre into new realms. It plays solidly enough, but in design terms it falls into the same trap as virtually every post-*Mario* platform game, borrowing so many elements from other titles that it often feels plain tired.

One cribbed element which stands out is the inter-level bonus game. By following the movements of a group of rotating boxes and then choosing the correct one when they come to rest, you can acquire extra lives and bonus icons. Fair enough, except that after several attempts it's possible to build up a ridiculously



testscreen



Set pieces, such as these toppling doll's houses (above), perfectly demonstrate the Saturn's ability to handle heavily texture-mapped surfaces. The faces of these toy boxes have been digitised (above left)





From bottom: the game's handling of perspective creates some wonderful scenes; this train moves into and behind the background; footballs can be used as weapons

large complement of lives, which significantly reduces the challenge. In fact, **Edge** completed the game on its default difficulty setting (labelled 'normal') at its first attempt, a task which lasted only a few hours.

Producing a platform game that genuinely breaks new ground is, of course, a tough task nowadays. But a groundbreaking game is exactly what Saturn owners will be expecting. There's no point buying next-generation hardware unless the software not only looks like cutting-edge 32bit material but is also better to play than its forebears. Sadly, Clockwork Knight fails on the latter count. The wait is now on for Clockwork Knight 2, currently in production at Sega Japan. Maybe Pepperouchau's next mission will be a more convincing all-round success.

Edge rating:

Six out of ten







The penultimate boss jumps around angrily, eventually crashing through the platform below to send you both plummeting (above left and right). It then reforms to create this baddie (top right)

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shading with texture mapped objects isn't a graphical style that suits every type of game, but it lends itself perfectly to the debut title from Japanese studio (deep breath) Poly's New **Generation Game** gameplay here isn't as vividly realised as

Motor Toon Grand Prix

Format: Sony PlayStation

Publisher: Sony Computer

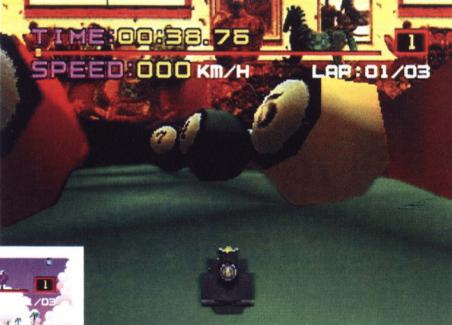
Entertainment

Developer: Poly's New

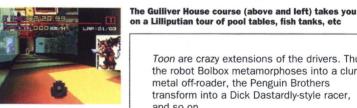
Generation Game

Making Project

Price: ¥5400 (£34) Release: Out now (Japan)







The wacky racers in Motor Toon Grand Prix are a far call from the street-legal hotrods of Ridge Racer. The cartoon theme continues through to the colourful scenery and odd settings

Toon are crazy extensions of the drivers. Thus the robot Bolbox metamorphoses into a clunky metal off-roader, the Penguin Brothers

transform into a Dick Dastardly-style racer, and so on. The cartoon (motortoon?) theme is

continued in the way the cars bend, stretch and jiggle around the course, and by the gloriously colourful settings for each race. Ridge Racer convinced everyone of the

PlayStation's graphics credentials, and Motor Toon's sumptuous scenery merely reinforces its reputation. The extensively Gouraud-shaded landscapes provide the perfect backdrop for the

not-entirely-serious nature of the game, and the three main Grand Prix courses - Toon Island, Plastic Lake and Gulliver House - offer some genuinely breathtaking views.

Graphics aside, any racing game lives or dies by the way it

erhaps in an attempt to emulate Nintendo's unnatural ability to breathe life into its game characters, Sony has eschewed the conventional racing game (a market already cornered by Ridge Racer) for one of its star PlayStation releases and chosen to make Motor Toon Grand Prix wildly idiosyncratic.

Based on characters designed by Susuma Matsushita, whose work graces the cover of Japanese games journal Famicom Tsushin every week, the vehicles in Motor

1995





The Gulliver House grand prix course features translucent fishtanks – complete with fish (far left) – and a polygon PlayStation. Sadly, the TV picture is just rolling static

















Now de rigeur for polygon racers is the multiple view option. Not to be outdone, *Motor Toon* has four such viewpoints. From the extreme helicopter view (top left) you zoom in to the ubiquitous in-car view (top right). There's also a handy rear-view mirror option which is used to check up on the competition approaching from behind (bottom row). Unlike *Ridge Racer*, *Motor Toon* is best played using one of the two high viewpoints

plays. *Motor Toon*'s gameplay is as simple as it gets. There are no hidden agendas; it's just a matter of completing the race and coming first. Which, given the jolly nature of *Motor Toon*, is something of a missed opportunity. Secret routes, jumps and bonuses would have added some much-needed depth to the game and significantly extended its lifespan.

There are four race modes to choose from: Grand Prix, Time Attack, Match Race and Dual

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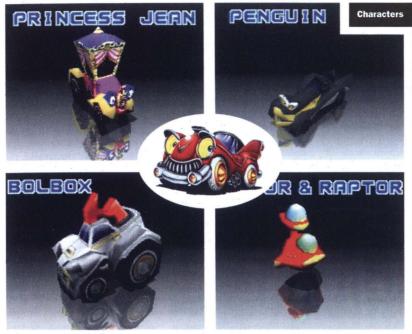
The Plastic Lake grand prix course is a sumptuous advertisement for 24bit graphics

Race, the latter two only available as splitscreen, twoplayer, twin-joypad races. Grand Prix mode speaks for itself, and provides *Motor Toon*'s main allure. Time Attack is an ingenious way of playing and bettering your own times. First you race solo around one of the courses in order to beat the clock. The next race sees you playing against a ghost-like doppelganger, which faithfully mimics the route and speed of your first race. In all subsequent races you compete against your own fastest time, which is actually a lot more addictive than it sounds.

In truth, the twoplayer modes, Match Race and Dual Race, aren't up to much. The courses aren't very interesting, the split screen is oddly claustrophobic – your forward view is limited – and both suffer from one major flaw: players can't choose the same car. The whole idea of pitting one person against another is that the challenge is identical for both participants. And given that the cars in *Motor Toon* all have widely varying characteristics, the lack of an option to select

7

testscreen



The cars and characters in *Motor Toon* were designed by Japanese artist Susuma Matsushita. His original airbrush designs (centre) have been ably converted into texture-mapped 3D

the same car is plain dim. For instance, anyone choosing Captain Rock over Bolbox will win. Simple as that.

And this disparity in the strengths of the various cars means that later courses can only be beaten with certain vehicles, which rather erodes the point of having different characters in the first place.

Motor Toon has several other annoying traits which prevent it from becoming a classic. Each of the cars has its own peculiar handling properties, whether it's cornering, top speed or whatever. But they all have a disturbing tendency to get stuck against walls. Fail to make a sharp corner and your vehicle



At the start of each race your character spins down out of the sky before turning into a car

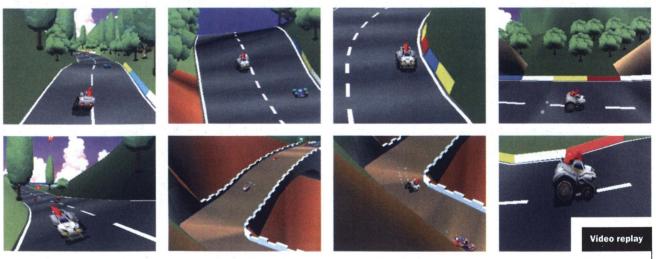
runs headlong into the wall, rebounds slightly and stops. But it never rebounds far enough for you to turn sharply and carry on racing; even with full lock on, you run into the wall again. To continue, you either have to turn in the opposite direction and do a full 360-degree manoeuvre or execute a three-point turn. Either way, enough time is wasted to ensure a low position in the final rankings.

A similarly irritating flaw is the fact that there's no guide to where you are in relation to the other racers. Unless you can actually see the car in front, there's always a nagging feeling that you're the only one on the course. This means that you never really know how well you're doing until it's all over.

In short, the odd foibles of *Motor Toon GP* and the unnatural way in which the cars handle means that the game falls well short of *Ridge Racer* in terms of challenge and excitement. PlayStation owners gagging for new software won't be too disappointed, but discerning gamers might do well to grit their teeth and wait a few weeks for the next wave of software.

Edge rating:

Six out of ten



Finish a grand prix in first place and you're treated to a video replay of the entire race. Here we see Bolbox powering through the Toon Island course. The variety and style of the camera views is outstanding, with all manner of tracking, pan and dolly shots making the replay worth attaining

EDGE

magazine March 1995

testscreen



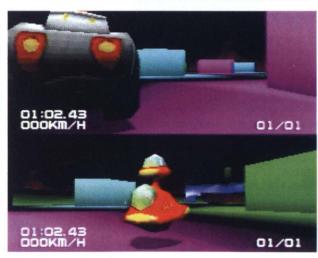




If nothing else, *Motor Toon* is *weird*. The Plastic Lake course is a heady mixture of colours, Gouraud shading and drugs









The four main race options in *Motor Toon* are Grand Prix (top left), Dual Race (top right), Match Race (bottom left) and Time Attack. The difference between Dual and Match races is that you race against another person either on the same course or on parallel courses. Time Attack has you racing against your best time, in the form of a duplicate car





Bolbox the robot tramples through the forest on his way to winning the race (right). Sadly, the ability to change from car to char is both random and pointless

prescreen

Damocles

EDGE

Though it has much in common with the Amiga original, the PC interpretation of Damocles sees 3D programmer extraordinaire Paul Woakes expanding his repertoire to include texturemapped 3D spaces. If Novagen's promotional talk is to believed, the game's ambition is staggering.

Format: PC CD-ROM

Publisher: Psygnosis

Developer: Novagen

Release date: May

O i di Alla

Origin: UK

PC owners with CD-ROM drives can now reap the benefit of Paul Woakes' demonstrable expertise at producing complex, involving and playable games





The Damocles universe calculates which parts of the planets are in daylight

PANOLICS

Although Damocles' graphics aren't shadowed or even light sourced (on planet surfaces), the level of detail and the texturing makes it feel particularly solid

Fully shaded, fully textured, and with realistically calculated movement paths, the Damocles solar system goes far beyond the bland deep-space environments of games like Wing Commander 3

ovagen's Mercenary series represented the pinnacle of 3D gaming on machines like the C64, Atari ST and Amiga. Now, almost a

decade since the original *Mercenary* appeared, *Damocles* – the second title in the trilogy – is to be converted to the PC with the addition of a range of visual bells and whistles.

Programmer Paul Woakes has developed a very individual game style which gives the player full 3D environments to discover and explore, from underground tunnels to wide-open cities and deep space. A number of vehicles can be commandeered to traverse the various environments, allowing you to discover missions, puzzles, quests, clues and objects. It's very much an adventure based system,

but the realtime graphics and full freedom of movement give *Damocles* a simulation-like edge.

Like Woakes' original 3D visions, the aim of PC Damocles is to immerse the player in as virtual an environment as possible without the aid of extra equipment (though Novagen does intend to support major VR helmet standards). This acute feeling of 'being there' isn't down to a flash 3D graphics engine (although Damocles' highly detailed graphics are fine) or any other clever programming tricks. It's just that Woakes understands how to construct a believable, living environment. From the detail of a street lamp to the layout of an entire solar system, Damocles is fascinating simply as an exercise in simulaton.

The level of detail and the true scale of the thing is brought home by

magazine April 1995













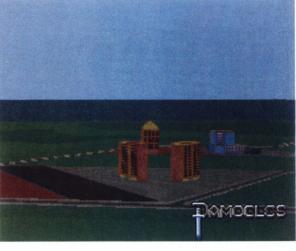
1 Entering Dion's atmosphere. 2 Birmingham Island appears beneath you. 3 Closer to the surface, you see Birmingham Island's commercial centre. 4 Notice that even road networks are fully mapped out. 5 Right down on the planet surface. 6 A '99 Chevy – just one of the many vehicles the player can use to traverse the gameworld



In this scene you're Flying low over the Atropos moonbase as the planet Dion rises slowly over the horizon

one of the game's demo flights through the solar system. It begins with a view of a starfield before the camera hurtles towards a planet. The view then changes to below the cloud cover and a whole continent is revealed ahead of you, getting closer by the second. First huge land masses, then cities, then buildings, city streets, and grassy plains resolve as the camera zooms downwards, pulling up at the last moment, performing a flyby of a shoreside town, then darting back off into deep space towards a nearby moon. It's an exhilarating ride.

Such is Paul Woakes' dedication to the actual game environment that he never even begins to work on puzzles, situations or storylines until he's created the big picture. The game structure isn't actually a problem with Damocles, though, because the plot, puzzles, and basic environment have all been reproduced from the Amiga original. This may provoke criticism from some quarters, but Novagen is confident that the winning formula of the Amiga game is more than enough to satisfy PC owners.



Coming in low for a skyscraper fly-by. One of these buildings may hold a vital clue to help you save the planet from disaster

The plot takes place in a nineplanet, 19-moon solar system whose fifth planet is threatened by the comet Damocles. The player's task is to avert this disaster, but with no easy solution in sight and a whole solar system to explore, the route to success is long and packed with sub-plots, diversions, and startling developments.

Because *Damocles* offers a fully fleshed out game world, the player has total freedom to interact with anything, and there's rarely one solution to any problem. The result, as Novagen's **Bruce Jordon** explains, is that 'the player determines their own end of game. They can potentially possess everything worth playing for, or they can conceivably have destroyed all that was there to play with.'

You could almost call it 'Sim Solar System'.





One of *Damocles*' greatest assets is the way objects retain clarity even when far off in the distance

Return Fire

EDGE

Essentially a sequel to Firepower, the cult action wargame that appeared on 8bit and 16bit computers, Return Fire expands on its principles in almost every respect but retains the original game's cracking attention to detail. With releases such as this, the 3DO software library is gaining some much-

Format: 3D0

Publisher: Prolific

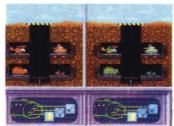
Publishing

Developer: Silent Software

Price: £50

Release: Out now (US)







Select one of the game's 60 or so theatres of war (top). Then choose your mode of transport (middle). The winner of each bout is treated to a ticker-tape parade (bottom)



Explosions (above), accompanied by manic laughter, are one of *Return Fire*'s most spectacular aspects

fter struggling with some unforeseen delays, Silent Software's *Return Fire* has finally made its appearance. And it looks like the wait has been worthwhile.

The game is set on a group of islands off the Australian coast. The aim of each mission is to locate and capture the flag fluttering above your enemy's HQ and return it to your own base. To accomplish this task, you're provided with a limited number of tanks, helicopters, APCs and jeeps.

After John Madden Football, Return Fire is arguably only the second serious longterm challenge available for two players on the 3DO. Although you can play against the computer, it's the dual-player mode that really makes the game stand out. With two participants, Return Fire becomes an exemplary blend of strategy and all-out combat. You have to battle your way through the assorted fixed gun and rocket emplacements defending the enemy base while at the same time keeping an eye on your opponent's progress. There are no 'correct'



It's easy to reduce even the most heavily fortified base to rubble in oneplayer mode

tactics here; because two humans are involved and each of the 60 well-designed playing maps is different, you have to constantly adapt to changing circumstances.

One of the most effective enemy tactics is to lay a proximity mine on a bridge. Your opponent then has the choice of either finding an alternative route (more combat and loss of time) or using the amphibious jeep to cross the river (risky, as the jeep can only withstand

EDGE

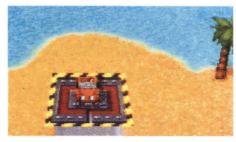
magazine

1995









Each of the four vehicles in *Return Fire* has its own unique characteristics (see panel right). There's a finite number of each, so deciding which one to use and when is a crucial strategic decision

Getting around

There are four vehicles available in *Return Fire*. To have any hope of completing each mission, you have to use the one that's most appropriate to the circumstances.

Helicopters are vulnerable to enemy fire. They're best used to scout out the flag and for last-minute hit-and-run attacks on your opponent's jeep.

APCs are slow but heavily armoured. They are ideal 'first assault' vehicles as their rockets inflict severe damage. They're also the only vehicles capable of laying mines.

Tanks are more effective in open country than built-up areas. They're tough, relatively fast and can bring down enemy helicopters easily.

The jeep is the only vehicle that can collect the enemy's flag. Very fast, manoeuvrable, and instantly destroyed by enemy flak.

one hit). It's this type of cat-and-mouse gameplay (the bridge is now obviously off-limits for you as well) that makes each game unique.

It's just a shame that the oneplayer mode fails to grip to the same extent. Because the computer doesn't directly attack your headquarters, even the hardest missions lack challenge and are fairly unrewarding. A more rigid structure, a greater number of mines and some enemy tanks patrolling crucial locations would have ensured greater longevity.

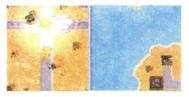
The graphics provide a perfect complement to the rich gameplay of the twoplayer mode. Although the bottom third of the screen is taken up with an oversized instrument panel, which means that the playing windows are relatively small, the game still manages to include plenty of detail. Trees toppling over one by one, rockets trailing smoke and little men fleeing from exploding buildings are typical. The camera zooms in and out to allow the player to see the action from the ideal angle – close up for battles, distant when you're travelling fast. The display does jerk occasionally, but this never really becomes irritating.

The sound is equally impressive. Rather than plump for the usual synthesised beeps and whistles, Silent has gone for an entirely classical score, overlaid with momentous explosions and presented in sumptuous Dolby Surround sound. The result is reminiscent of the pomp and ceremony of a Soviet-era May Day parade.

Return Fire is one of the few titles outside the beat 'em up genre to fully exploit the gameplay potential of playing against a human opponent. It's fast, competitive, strategic and, above all, fun. And that's a pretty compelling combination.











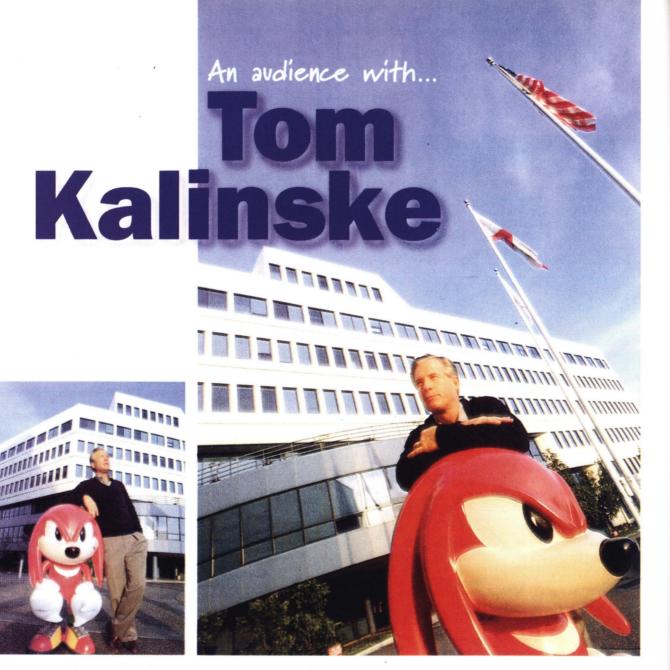
Clockwise from top left: lay mines around the enemy base when you're feeling the pressure; a twin rocket emplacement bites the dust; mining bridges effectively is a tough skill to master; clear all resistance with some heavy firepower before approaching the flag with the jeep; when the flag is discovered, a close-up lets your opponent know all about it

Edge rating:

Eight out of ten



Sega's Saturn has proved an instant hit in Japan, but right now the company's activities in the west are focused on the Mega Drive add-on, 32X, with its sister console, Neptune, lined up for launch later in the year. Behind the strategy, it transpires, is an all-important \$300 price point, as its US president explains...



The United States is the crucial territory in Sega's global commercial strategy. **Edge** talks to Tom Kalinske, head of Sega US and the man charged with buttressing its market share against the onslaught to come

S

ega hasn't always been the videogames giant it is today. Back in 1990, Nintendo seemed indestructible. The mighty NES had

conquered the world, and no-one would have believed that a small rival – with its roots in the pinball industry – could beat the Big N to the punch with a 16bit gaming system. But that's exactly what happened in the US. Nintendo never caught up after Sega's head start and the US is still a market in which Sega holds sway.

But now Sony is threatening to do to Sega what Sega did to Nintendo. And for the moment Sega is pinning all its hopes on the 32X as the weapon to fend off the looming menace of the PlayStation. **Edge** met the boss of Sega Of America, Tom Kalinske, to find out how the company sees its future in an increasingly tough market.

Edge Just as Sega Japan rolled out Saturn, Sega US put all its resources behind the launch of the 32X instead. Does this betray your lack of faith in Saturn?

Tom No, no, I love Saturn. For me, it's a magnificent product. It just all comes down to price, and right now it's not a massmarket item. I was in Japan for the launch of Saturn and it was selling out just as fast as it was arriving in the stores. I'm amazed at how they manage to sell so many of these machines at what are very high prices. But the US is a very different market to Japan and we in Sega USA recognise the importance of proper pricing. Edge So US gamers have got 32X instead. As you know, Edge has doubts about whether 32X is a wise move: it stretches Sega's resources, it has to be a distraction from the US launch of Saturn and, in all honesty, it's not really that good.

Tom One thing that people don't appreciate is the importance of price to the mass market in this country. The US has always been very, very price driven. To sell huge units of anything - be it TVs, VCRs or cellular telephones - the price must be right. No matter how great Saturn is, or PlayStation is, or Ultra 64 is, we will outsell them by an enormous amount with 32X, simply because of the price. The technology of 32X happens to be pretty good, but the price point is so important in the US market that how good it is really doesn't matter. We've got to have a product out there that the consumer can afford to buy. The thought, 'Let's upgrade the 16bit Genesis they already own to a 32bit experience' was the most logical one. Edge As opposed to starting over with an entirely new machine?

Tom Sure. Now, later in the year we'll have Neptune out, which is a standalone system for new people coming into the market or people who have owned an alternative system and want to come over. But again, the idea will be to keep the price reasonable enough for the 98% of Americans for whom price is important. That's the real reason behind 32X.

There's a price boundary above which something won't sell. If you look at the history of electronics, the first magic price point is \$300. If your product costs more than \$300 then your market is very limited. And it doesn't matter what you're talking about - it can be a telephone or a TV. Take audio CD players: they never sold over a million until they got below \$300. The same is true for videogames machines. That's why 3DO hasn't been successful.

So that's the first magic price point. It then goes in \$100 blocks, so the next

would be \$199 and then after that \$99. And this is the current status of the 16bit business. Both Nintendo and ourselves have been at \$99, albeit without a game included. We're both selling huge, huge numbers of units.

I love Saturn. I'm just amazed at how Edge 32X was supposed to retail for they many of these \$10 less than the \$159.99 it was launched at in the United States and was also

meant to include a bundled game. What happened?

Tom I think it's like anything else. When you design an electronics product you always start higher than where you ultimately want to be at, and then the price always comes down quickly.

Edge Presumably you're aiming for a price of under \$100?

Tom Sure, that would be great. But I don't think it's realistic.

Edge Do you play games yourself? Tom Yep.

Edge As a gamer, how do you personally rate the 32X games available so far? Tom Well, ah... You know, I... The one I





Tom Kalinske's stamping ground is Sega USA's headquarters in Redwood City, northern California. It is from here that the launch of the 32X is being orchestrated

like best is Doom, that's personally one of my favourite games. And I think it's fantastic that it's the complete game, as I'm sure you know on

one of the other systems out there there's no sounds, and I can't imagine a game without sound. It would be like watching a movie with the sound turned off. But obviously I have to play Doom by myself. In my family

setting I'll probably play

Star Wars and my daughters

machines at what are very high prices are big fans of Virtua Racing. And I think that some of the titles coming along will be fantastic. I think, um, Metal Head will be great and I happen to think that our golf game...

Edge Can you remember the title offhand?

Tom Golf Magazine's Freddy Couples' 36 Greatest Holes - that has to be the longest title! And I know there are a lot of games coming along that I like a lot.

Edge There's no mistaking the pedigree of Doom or Virtua Racing, but do you think they're impressive from a technological point of view? The action in Doom isn't fullscreen and Virtua Racing is barely distinguishable form the Genesis version.

Tom Actually, I think Virtua Racing is a big improvement - you've got plenty more games options. But you've got to remember that these are just the very first titles. Remember the titles that we first introduced Genesis with, like Altered Beast? The improvements that you make from your introductory titles are enormous. And the 32X titles coming out in March and April will be fantastic. We have seen things, internally, that we're working on where 32X titles are beginning to look as good as Saturn games.

Edge Can you name names?

Tom Well, I can tell you one that doesn't quite get there but will be very, very good and be a huge seller and that's Virtua Fighter. It will be a terrific title.

Edge Will it make up for Cosmic Carnage?

Tom Well, you know, every now and then there are games which we're not so happy with. It's all part of the learning process. Edge So what lifespan are you looking at

for the 32X?

Tom I think three or four years. Looking at Genesis, I think last year between ourselves and Nintendo we sold about 9.5 million units of 16bit hardware. Next year we expect this to drop by about 35%, which still leaves a very big number, and even if it drops further in 1996 it still leaves

interview

a very respectable market. So as long as you have a decent market on Genesis, there's going to be an even bigger market for 32X, trailing a little behind.

Edge When will Saturn launch in the US? Tom We haven't stated yet. We're in great shape for the launch. Virtua Fighter is a phenomenon in Japan, and over here too. I love the game - I actually have an arcade unit at home. We'll be able to launch with both this and Daytona, so we're in great shape. But having said that, as with the launch of 32X where I wish we had more titles, I want to have ten great titles at launch and it's this that will determine Saturn's release date. I'm still assuming that it will be the back half of 1995.

Edge Sega pioneered the concept of cool, stylish, brand advertising in the videogames market. As a result, you created a 'Sega Generation' of die-hard Sega fanatics who won't play any other system. Now, these gamers are being pointed in the direction of 32X instead of being kept on a back burner anticipating the launch of Saturn. Is there now a danger that Saturn will launch with no 'instant buyers' to help it through its infancy?

Tom As I said, we certainly intend to sell more 32Xs in 1995 than Saturn machines. And it's not just because we make more money on 32X but because we think we owe it to the userbase of Genesis owners to give them an upgrade path at a reasonable price. And no, I don't think there's any risk. Once we get a chance to explain the whole product portfolio and once we're able to delineate this to all our customers - which we haven't been able to do yet because Saturn isn't actually available yet - then hopefully they'll see that what we're trying to do is provide something for every pocket.

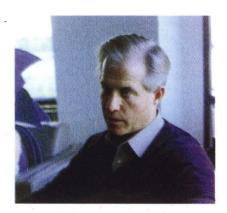
Edge How much of your plans for Saturn's I still feel like an launch are dependent on what Sony does with the launch of PlayStation?

underdog live never
overcome the they Tom I can't do much about how they're going to price the PlayStation. As you know, in Japan the PlayStation is about ¥5000-¥6000 (£30) cheaper than us, and recently I talked to a number of Japanese retailers and although it was the first

weekend of the PlayStation's launch we were still outselling them at a ratio of around 5:3 in general. So we have to assume that the same kind of pricing holds true here, and that there's

not much I can do about it. I can't really react a heck of a lot to their lower price. I have to market on the basis of having better titles instead.

Edge Sega Japan's president, Hayao Nakayama, has been quoted as saying, 'Sometimes we will win and sometimes others will win. For certain we will survive. Whether as number one or number two I don't know.' This a very unusual admission for a Japanese businessman and is - if not exactly defeatist - certainly extremely honest. Are these the words of a frightened man?





Tom Kalinske professes to be unconcerned by the imminent launch of the PlayStation, which he claims is technologically inferior to Saturn

Tom Oh no. Nakayama-san has never been frightened in his life. I think he was just being humble, and if you were to ask him now I think he would tell you that Sega is clearly winning the battle with Sony and that he's pretty happy with the situation.

Edge To what extent is 32X preventing you from reducing the price of Saturn? If you truly believe that 32X is a massmarket item, then surely you don't want to tread on its toes in terms of price?

going to pounce on us Tom It's not stopping me at all. I'd love to drop the price of Saturn, but its price is dependent on a physical cost and that's why it's been marketed at ¥44,000 in Tokyo.

at any moment Edge Will the Saturn released in the US be exactly the same as the machine launched in Japan?

Tom Yes.

Edge What price will it be launched at? Tom We haven't announced anything yet.



But you know how it usually translates from Japan to here...

Edge So we're still looking at a price of initially around \$450. You say your hands are tied in terms of price, but prior to the launch of Saturn and PlayStation in Japan our Tokyo correspondent reported fierce competitiveness between the two

companies. Both held back on prices, both kept shifting release dates and both kept their cards very close to their chest. Can we expect the same level of cat-and-mouse rivalry come the US launch?

Tom I imagine. [Smiles.] Yeah, it's great because we respect our competitors so much and in the case of Sony we're going to keep a lot of things as quiet as possible until we spring them on them, and I'm sure they will do exactly the same to us.

Edge So you're ready for Sony?

Tom I'm ready for Sony, sure. I look forward to the battle.

Edge 32X, Genesis, Sega CD, 32X CD, plus Game Gear, plus Saturn - that's six separate platforms you're committed too. And owners of each of these systems deserve the very best games that Sega can produce. But with six systems in your stable, surely development resources have to be spread perilously thinly? One of Sega's product managers for Sega CD told Edge that it's been very difficult getting teams enthused to work on Sega CD games when they could be playing with the sexy new 32bit stuff. Now, on the one hand you say that it's the 16bit games that are mass market and your main focus, but on the other hand it looks like development for Sega CD is in severe danger of being sidelined...

Tom Here's what we're trying to do. When you're doing a title such as Fahrenheit or, say, Wirehead – titles which involve digitised video – then we'll try and release versions for 32X CD and Sega CD at the same time and in the same box. We're trying to keep the development time of both versions to within two or three weeks of each other to ensure that this trend continues, which should mean that there is a continued flow of quality Sega CD titles.

Edge So that will help ease the burden regarding the number of Sega boxes on store shelves at any one time. But can Sega truly keep on developing killer titles for all its gaming systems?

Tom I think so. As you know, we have expanded here. We have over 350 people and although our main focus remains on Genesis, our people are pretty evenly spread on all the systems – at least now in the first quarter of 1995.

Edge But there can only be one 'A' team. What platform are Sega's hotshots working on right now?

Tom In Japan, the 'A' team is AM2 and last year they were havily involved with getting *Virtua Fighter 2* done. They're also working on versions for Saturn and 32X. But in the US I think we have – I hope – a number of

'A' teams and one of our primary focuses has always been on sports, so we're looking at keeping a lot of attention on making the best sports games we can.

Edge Sega is now a big enough company to do this type of multi-product business, but the flip side is that Sega is no longer the underdog. Isn't there a danger that the same conditions that made Nintendo vulnerable to a lean, hungry, fast-on-its-feet competitor four years ago could now make Sega vulnerable in 1995?

Tom I still feel – and I think most of us here still feel – like an underdog. I don't

Tom The great thing about our arcade business is that it's like having a huge test market. There are a lot of arcade games that aren't huge hits, and you don't see those translated to the home world. What you see are the huge hits, and this is a tremendous benefit to us. Then there's the technological advantage that having an arcade division brings, and a lot of lessons learned in the coin-op business have helped the development of our home systems. Edge What, in your opinion, are the strengths and weaknesses of your rival systems? 3DO, for example?



Sonic established Sega as a major force the US videogames arena. The company will be hoping that forthcoming Sonic games on the 32X and Saturn will help it maintain that position

know why, I've never overcome the sensation that they're about to pounce on us at any moment! And we're up against bigger competitors so how can we not be the underdog? We're up against Nintendo, which is a substantially bigger company and has much more cash in the bank. We're up against Sony and God knows how much cash they have in the bank. So we have to keep feeling that we're the underdog and keep operating in that way. The bottom line is that the two things we do very well are make great games and then market them very successfully. I think if we can continue to do this then we can compete with these guys.

Edge You mention Virtua Fighter and Daytona for Saturn, while Virtua Racing and Super Star Wars are two of 32X's main attractions. Is Sega's arcade heritage now paying off when it comes to launching new home machines?

Tom I've been very consistent on this subject. While I happen to like Trip Hawkins very much as a person, I don't think the strategy has worked and I don't believe he will ultimately be successful. The sales of under 100,000 in the US everyone recognises as a failure. I've heard that he has sold 150,000 in Japan but I've also heard that since the PlayStation and Saturn came out, sales of 3DO have stopped dead. Since last weekend when I was in Japan, the 3DO machines have been moved to the back corners of the shop - they're not on prominent display any longer - and I think this is an accurate indication of its new status. It simply doesn't compete.

Edge So you believe that – in Japan at least – 3DO's window of opportunity has just slammed shut?

Tom Yep, it's now passed by. Edge What about the Jaguar?

Tom I don't believe the current Jaguar is

interview

powerful enough to compete with the new machines and there's not enough great software out there to support it. They've done a better job recently of getting some other decent games out for it but it's not enough to save it. It's too little, too late. Edge What is the current relationship between Atari and Sega following the

a lot of different rumours, and of course I respect them for what they are: a very strong, big, hi-tech electronics company. But they have failed a few times with consumer products - we all remember Betamax - and so we're all hoping that the PlayStation turns out to be another Betamax and that in a couple of years' time we'll be able to tell people to play their Saturns on a Sony TV.

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Sega has hitherto depended on the youth appeal of cartoon characters like Sonic and Knuckles. But the company is now committed to expanding the market by targeting older people

stock holder in the company and we have both agreed to cross-license from each other, so we are looking at the library of old Atari titles and seeing if they make any sense for releasing on any of our platforms and they are looking at some of our titles to see if they make sense for Jaguar.

Edge Can you name names?

Tom No, nothing's been decided yet. Edge Neptune, when launched, will be competing toe-to-toe with laguar. Both are cartridge-based machines priced at around \$200. How will Sega's machine compare?

Tom Well, our big advantage there, of course, is the enormous library of existing games, with more on the way

Edge What about the biggest rival of all, Sony? Although it's a newcomer to the world of videogaming and it hasn't always been successful at launching new gizmos in the past, it has a very powerful machine and considerable resources.

Tom I don't know anything of their US plans. They certainly aren't confiding in me what they have up their sleeves! I've heard

Edge The Betamax analogy is mischievous, because Betamax was actually technologically superior to the VHS system which overtook it...

Tom Yes it was, but it wasn't successful. Edge So would you rather be successful than superior?

I don't believe Trip Successful in the US Tom Hmm. From what I've seen, I Hawkins will be would say that we have superior technology. Who knows whether they'll come up to our level a little way down the learning curve? But from what I've seen now, they have a lot of titles out that don't make any sense, so I think that we are ahead of them in the software line-up

area as well.

Edge How are you faring in the battle with your old rival, Nintendo?

Tom Who? [Laughs.] The current battle is

being fought between Genesis and the SNES for 16bit superiority and we're still beating them in share of market and there's nothing that they could have done to overtake us this year. They did a good job - and I must give them credit - on Donkey Kong Country, and they did a great marketing job. But even with that we will outsell them on both hardware and software this year. In terms of the future, we think we will continue to beat them with a broader and better software library. Edge What about Ultra 64?

Tom I just don't believe in the longterm health of a high-priced cartridge-based business. I think that at some point you have to convert to CD-ROM. I know they claim they have this wonderful compression scheme, but so do we. Everyone has wonderful compression schemes, but the bottom line is that you end up with these high-meg cartridges that cost a lot of money, so the price ends up too much for the consumer and the revenue ends up too small for the thirdparty manufacturer or, indeed, the parent company. So I think Nintendo's current strategy for the Ultra 64 is incorrect and may in fact be subterfuge maybe they really are planning on bringing out a CD drive for the Ultra 64 which will bring the price of the machine up to the same price as everyone else's.

The other problem, of course, is that how are you ever meant to do more than what you're doing today on cartridges if you don't move to CD? How do you ever really incorporate the wonderful things you can do with film, special effects and Silicon Graphics computers if you don't move to CD-ROM?

Edge How does the Sega Channel fit in with Sega's longterm plans? Is the goal to eventually replace cartridges and CDs with games on demand via cable?

> Tom No, no. The latest research shows that aside from the fact that a lot of people want to sign up for it people who sign up for the Sega Channel actually buy

more software at retail than people who don't subscribe to it.

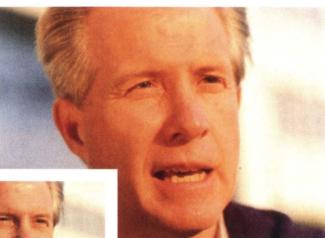
everyone racognises as a failure We think that this is because we show them new titles on the Sega Channel and they get excited about it and go buy them. Also, people fall in love with a game on the Sega Channel and then, when the selection of titles is rotated each month, they find that they can't play it any more and so



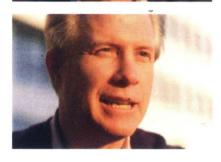


involved in its US West trial – both of which are fully interactive systems – so what is Sega doing to jump onto the interactive information superhighway?

Tom The Sega Channel is only limited because it's here today using today's technology. And certainly we're really interested in the future of gaming networks. We've been big supporters of Catapult Entertainment's X-Band system



The accepted wisdom at Sega US is that America is not yet ready for Saturn. However, confidence in the 32X seems to be riding high



maybe that drives them to a retail shop to buy it.

Edge So Sega is not only getting the benefit of revenues from the Channel itself but is consequently selling more 'conventional' games?

Tom That's right. And I think another big advantage is that the Sega Channel helps keep the Sega brand at the top of people's minds and it keeps the brand cool.

Edge The Sega Channel is pioneering, but its lifespan is critically limited because it's not interactive: it's just a constant supply of games into the home with no feedback from the 'viewer'. Nintendo has plans for its Gateway system, 3DO is heavily

and we hope that it will grow to be a successful, low-tech solution to interactivity. Aside from that, you kind of have to wait for the infrastructure before you can do it properly. The big problem I have with it is that it will not happen next year or the year after. I think we'll really have to wait until at least 2000 before the infrastructure is in place.

Edge Sega seems to have its fingers in all sorts of pies right now. As well as the six different home consoles, there's the arcade business, a new merchandising business, plans for amusement centres and even theme parks. Is there a danger of Sega losing its focus?

Tom The overall goal is to lead in interactive entertainment both in and out of the home. And we believe that hi-tech theme parks offer a big opportunity to us as a company. I don't think we're up against Disney or MCA in this category. We're doing something quite different. We're going to offer an all-weather, all-year-round venue for adults, children and kids to go to together more than once a year. At the moment you only go to Disney World maybe once a year, but Sega's planned facilities are such that families can visit

every weekend and have a new, exciting experience each time – as long as we change the software regularly enough. And the great thing is that what we do here cascades down into our arcade business, and then into the Saturn system – which is damn near equivalent to our arcade systems – and the other home systems.

Edge How else is Sega going to expand the games market? Pretty much every male teenager in the United States is a videogame fan, but for your business to continue growing you need to attract a wider audience. How are you planning to do this?

Tom Yesterday I looked at the first commercial we've specifically targeted at women. It goes into advertising research this weekend and we hope to have it on the air early this year. But you're right, we have to find a way to get women playing videogames and obviously there are a number of problems that you have to overcome. Firstly, for a lot of women, playing against a male is very intimidating you know that the guy's going to beat the hell out of you and you won't have a chance. Secondly, we have to provide gaming experiences that are more enjoyable for women. Now, 25% of the players of the Sega Channel - during our tests - were women, which is significantly higher than the percentages of ordinary home systems, in which there are just between 15% and 20% women. And what that's said to us is something that we've known all along and that is that women and girls want to play videogames, but there's something intimidating about the current experience that doesn't facilitate them. There's a big opportunity there.

The older market we're targeting pretty well already. We think that the key for this group is sports, and we figure that the more realistic we make sports games, the wider their appeal will spread to an older audience.

Edge To what extent will Saturn be targeted at newcomers to videogames?

Tom I think you'll see a lot of that happening because they'll see how it looks and plays, but I do think that the majority of our sales will initially be to experienced gamers. Having said that, we do expect Saturn to attract a much older audience. In 1994 over 40% of our Genesis sales were to people 18 or over and you can only imagine who'll buy Saturn – I wouldn't be surprised if everyone who bought it was over 18.

Edge Because they're the ones with enough cash to afford it...

Tom Absolutely.



Amazing clorics.

Will an external optical drive costing E150 turn things around for the struggling Jaguar? Is it some kind of knee-jerk reaction to its competitors' specs? Does the lead character in Chaos Agenda look like one of the worst in gaming history? Going into the middle of 1995, Atari faces a lot of questions.

Jaguar plugs into Atari's delayed CD drive for the Jaguar finally The CD revolution

2

gets ready to ship





The Jaguar CD's software cinepak is surprisingly effective, although it's no surprise that pixellation rears its head when images move at speed

he Jaguar CD add-on, originally intended to be released in 1994, has now been scheduled for launch in April this year. It will retail at £150 and be bundled with one game (exactly which one is undecided).

The peripheral is a straightforward plug-in device. As well as being able to play Jaguar CD games, it can be used for conventional audio CDs – in conjunction with the latest incarnation of Jeff Minter's Colourspace project, Virtual Light Machine.

An all-in-one Jaguar CD unit will be released towards the end of the year. It will find itself in direct competition with the Saturn and PlayStation, which converge on the UK market at around the same time.

Of course, it will be software that will determine the system's success or otherwise, and the initial line-up includes few titles of note. The one most eagerly awaited by Jaguar owners is undoubtedly *Battlemorph*, the sequel to ATD's Gouraud-shaded shoot 'em up, *Cybermorph*. The gameplay runs along similar lines to the original but there are various additions, including impressive new underwater sections. (**Edge** will have a full preview of the game next month.)

Prolific Jaguar developer Rebellion has stated that it has no CD-specific projects in the pipeline, but a number

of its cartridge titles are due to get the CD treatment. The most promising of these is the Dungeon Masterish Legions Of The Undead (originally seen in Edge 4 under the working title Dungeon). Based on a graphics engine best described as a cross between

Cost was obviously a prime consideration during the development of the Jag CD – the unit has a slightly flimsy feel



Atari has yet to confirm it, but *Battlemorph* (above) is the most likely candidate to appear packaged with the unit. *Jack Nicklaus' Cyber Golf* (inset) is the first of a number of sports titles planned for the system



Looking suspiciously like Elite's dull PC and 3DO title Virtuoso is Chaos Agenda. Atari will be hoping to match its digitised characters with equally sharp gameplay





Virtual Light Machine

When an audio CD is inserted into the Jaquar drive, the machine automatically switches to VLM mode, an onboard software routine written by Tempest 2000 programmer Jeff Minter with Dr Ian Bennett.

A standard CD player front-end is displayed while coloured, music-sensitive patterns swirl, mutate and blend in the background.

The overall effect is similar to Panasonic's FZ-1 3D0 music-playing routine, although the VLM allows the user to choose between nine different patterns and is more visually responsive.





Set to appear on Jaguar CD: Demolition Man (top); Blue Lightning (main); and Argonaut's conversion of Creature Shock (above)

→ Alien Vs Predator and Doom, it will feature 'algorithmically animated textures' and offer the ability to look up and down. The cartridge version will be finished shortly and is likely to headline at Atari's ECTS stand.

However, probably the most exciting development for the Jaguar CD (Edge is certainly looking

forward to it) is the proposed conversion of Defender 2000, a project that came about when Jeff Minter approached Atari and suggested that he convert one of his all-time favourite games to the Jaguar. Like Tempest 2000. his previous tribute to a classic arcade title, it will incorporate both a straight emulation of the Williams original and an enhanced 'plus' version. Fully





Readysoft's Dragon's Lair series looks set to hit every CD system ever made

coloured backdrops (the original's backgrounds consisted of simple vector graphics), a CD soundtrack and Al-endowed multiples are all promised for the new game. Minter is currently putting the finishing touches to the core gameplay.

'It's looking more and more like this is gonna be on CD,' enthuses a typically exuberant Minter. 'I'd kinda like to do a historical section on there as well, because we get so much room on the CD - an

interview with Eugene Jarvis [the programmer of the original arcade game] maybe, and other historical data about Defender."

What is it?

It was arguably the first piece of hardware to attain mass must-have status. Such was its desirability at launch that a Japanese yakuza ring was rumoured to be planning a raid on the first shipments

Jaguar CD games in development

Barkley: Shut Up and Jam! Accolade Battlechess Interplay
Battlemorph: Cybermorph 2 Atari
B.I.O.S. Fear All Systems Go Blue Lightning Atari
Braindead 13 Readysoft Brett Hull Hockey Accolade Chaos Agenda Atari Creature Shock Virgin Interactive Crime Patrol American Laser Games Demolition Man Virgin Interactive Dracula The Undead Atari Dragon's Lair Readysoft Dragon's Lair II Readysoft Dreadnought Atari Evidence Microids
Freelancer 2120 Imagited Highlander Atari Horrorscope V-Reel Productions
Hosenose And Booger All Systems Go Isle Of The Dead Rainmaker Software
Jack Nicklaus' Cyber Golf Accolade Legions Of The Undead Rebellion Software Little Divil Gremlin Interactive Lobo Ocean Primal Rage Time Warner Interactive Mad Dog McCree American Laser Games Mortal Kombat III Williams The Outpost Atari Return To Zork Activision Robinson's Requiem Silmarils Skyhammer Rebellion Space Ace Readysoft Soul Star Core Design Space Pirates Atari Starnet Virtual Xperience Star Trek: NG Microprose Theme Park Bullfrog The Realm Fighters High Voltage Varuna's Forces Accent Media

Jaguar CD tech specs

Data transfer:	Double-speed drive – 352K/second sustained data rate
CD capacity:	790 megabytes (non-ISO 9660 custom Atari format)
CD management:	Custom 'Butch' processor handles system chores and buffers data
Save RAM:	VLM saves last setting without expansion. Flash RAM cartridge (1 Mbit) for multiple saves to be available separately
Video standard:	VideoCD (only with optional MPEG cartridge)
Release:	April 1995
Price:	£150





Edge's obsession with the French development community remains in good health, as illustrated by issue 20's cover story. With 1,600 animation frames for the main character alone, 27 minutes' worth of CG sequences and 256 screens of action, Heart Of Darkness certainly doesn't lack graphical content.



OfDarkness

The latest product of France's pioneering games industry is more than just another sprite-based platformer. **Edge** talks to the creators of the visually seductive *Heart Of Darkness* on the eve of its début

prescreen



Heart Of Darkness is a sinister adventure combining platform-style gameplay with superb animations and breathtaking cut-scenes. The game starts with Andy running away from school (above)

rédéric Savoir and Eric Chahi are tired. They haven't slept during the last 48 hours and are unlikely to get much kip during the

next 48. They finished burning a demo CD in Paris at 6:31am, caught le Shuttle at 6:45, arrived in London at 10:45 and have been involved in fraught recordingstudio sessions ever since. It's now 4:20pm and they're bouncing through the back alleys of Soho in a taxi as Edge quizzes them on the reason for their hectic schedule: Heart Of Darkness.

Heart Of Darkness is a game that has been shrouded in

The 12-strong Amazing Studio team - headed by Frédéric Savoir (far right) and Eric Chahi (front row, third from right) - has spent the best part of three years working on Heart Of Darkness, its first project near-military secrecy since its publicly unveiled at ECTS in just a

inception in 1992. Apart from a sneak peek in Edge 14, nothing has been seen of the game by anyone outside Amazing Studio and Virgin. It's taken three years for it to reach this stage, but now Heart Of Darkness is due to be

couple of days' time.

All this secrecy could, of course, just be a standard marketing ploy. Except that the creators of Heart Of Darkness are among the world's most respected games designers (quite an

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Most of the scenes in the finished game are remarkably faithful to the original sketches (top), created up to three years ago. Unusually, Amazing used 3D Studio rather than an SGI setup to render the backdrops (above)

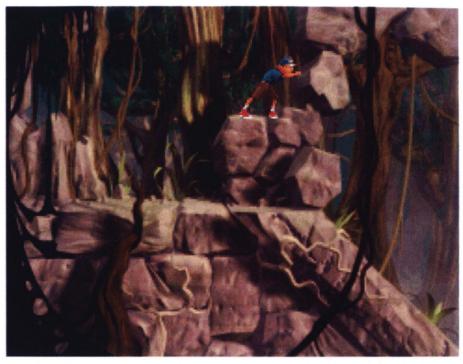
achievement for a French programming outfit). Frédéric Savoir was the lead coder on the original version of Flashback, and Eric Chahi was almost singlehandedly responsible for the legendary Amiga game Another World. Heart Of Darkness could be described as a convergence of those titles. Amazing's aim was to take the platform game to a new level of sophistication; many people think they have succeeded.

'I had no idea it was going to be this great,' beams Jon'
Norledge, the game's producer for Virgin Interactive
Entertainment. 'We met for the first time at ECTS in April 1992, but I couldn't imagine three years ago what it would turn out to be.'

This kind of praise is, of course, to be expected from a producer anxious to talk up his product. However, those involved with the project do seem genuinely enthusiastic, to a degree unusual even in the excitable games community. Having seen it, **Edge** can understand why.

The graphics in Heart

Of Darkness work so well that even the most clued-up observer



After the initial basic rendering, detailed textures are added to the scene (above). Every screen has up to six 'layers' of character movement, so sprites can pass in front of each other. Pressure points initiate CD sequences: here, Andy pushes the rocks forward, causing them to tumble down the slope

is unlikely to notice the programming mechanics behind them. The main character, Andy, alone draws from a pool of 1600 frames of animation in one direction (most cartridge games have around 1200 in total). To handle them, Frédéric created a complex game editor whose primary function is to ensure a seamless transition between the various types of movement.

Every frame in the game has a 'cause and effect' list. This strictly governs the change from one set of animations to another and pre-loads all possible 'next' frames into RAM in case they're required. For example, when Andy is running along, the 16 standard running frames are stored in sequence in a loop. If he jumps, the pre-loaded table calculates which frame of the run he is currently on and instantly switches to the applicable frame of the jumping animation. This avoids Another World-style stop/start blips which could break up the action.

'It's an action adventure,' explains Frédéric. 'The player can

jump run, fire, swing, shoot, swim and climb. But we don't want jerking when a player switches from one to another. The player must be in control all the time.'

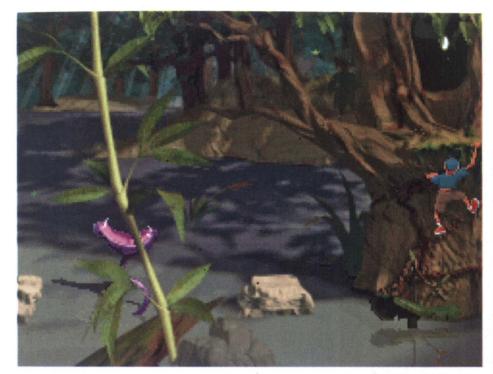
The game also features

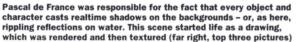
27 minutes of pre-rendered animations which, to avoid any access delay,

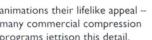
The fullscreen pre-rendered sequences feature animations that look more like the product of a Disney studio than that of a gamehouse

are stored in memory as you play. This required an inhouse solution to data compression, created by Daniel Morais. His system is specifically designed to retain the minute details that give the

prescreen







The pre-rendered sequences - which run fullscreen at 256x192 when animated they're simply ante, and its competitors will have a tough time catching up.

even more remarkable is that they were rendered using 3D Studio rather than a high-priced Silicon Graphics setup. 'We thought about using Silicon Graphics and

'But they're expensive and so is the software. They are very good but when we tested them [end of 1993] they were full of bugs and for the price that is unacceptable. We'd already started using 3D Studio and so it was quicker to carry on rather than start over.

'We'd never used any 3D packages before. It wasn't easy it's a laborious and painstaking

because of the results. When a new scene has been finished, other members of the team gather round and admire the work. There's an excitement in the office you rarely find with 12 people.'

Andy shins along a rock face, swinging from hold to hold. All the backdrops

were pre-rendered and then had the game logic superimposed on them using the editor developed by Frédéric Savoir specifically for the project

Despite the absence of SGI gear, Amazing had some pretty hefty kit at its disposal. 'We started using a 486 DX2/66 but

animations their lifelike appeal many commercial compression programs jettison this detail.



What makes the cut-scenes we tried them,' says Eric Chahi.



This malevolentlooking individual is Andy's teacher, who drives him out of the classroom at the beginning of the story. His cruel and vindictive nature is pivotal to the plot

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Andy can jump, run, fire, swing, shoot, climb and even swim (top), all without breaking into a sweat. Amazing went to great lengths to preserve animation continuity, not only for Andy himself but also for minor characters like these spectres. This attention to detail is evident throughout the game

now we're onto a 90MHz Pentium with 64Mb RAM,' says Eric. 'We'd like to use more but the PC doesn't recognise it. It's beginning to become very expensive to buy the memory!'

The end seems to have justified the means. Amazing has confounded the cynics by producing 3D Studio-generated images that actually look unique. The leading PC rendering package has become such a widely used tool in the industry that many games have a recognisable 3D Studio 'look'. Frédéric and Eric were determined to make Heart Of Darkness different. 'We don't want our graphics to look like computer graphics – they're too clean for us,' asserts Eric.

To avoid the blandness of conventional 3D Studio images, Eric and Chris Delaporte created all the Heart Of Darkness textures themselves instead of using the supplied texture maps to which

most developers limit themselves. The team then added 'noise' to the signal to create extra realism.

'It's not like merely watching a spacecraft docking and going "Wow, that's beautiful", like many programs are,' explains Jon Norledge. 'It's not using 3D graphics just to show pretty pictures. It's telling our own story.'

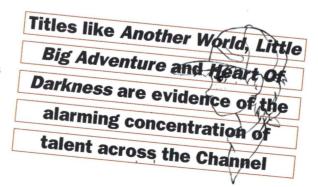
And it's a carefully crafted story. Amazing Studio spent the first six months of *Heart Of Darkness*' development process constructing intricate plans of every character, background, animation and level. (T've got maps of every single level in the game which date back over two years — and hardly a screen has altered

In each of the game's 256 screens, the player has the ability to interact with everything that's visible – it's not just a question of

since then,' claims Norledge.)

Even Andy's most basic moves use a huge number of frames (above). Amazing has proved that sprite-based games still have potential. The return to traditional animation techniques will no doubt be welcomed by many platformer devotees. Team members Stéphane Hamache, Jérome Combe and Christian Robert (top, left to right)

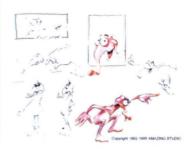
shooting other characters.
Shadows are calculated and distorted in realtime, and rippling reflections are created when Andy moves over water. Objects can be picked up and used when they're needed – although there's no set order in which you



prescreen













HOD's appeal is largely due to Christian Robert's charming character design. Here, Andy and his dog, Whisky, gaze skyward at the disaster about to befall them



Lead 3D animator **Fabrice Visserot** created much of the 3D animation in **Heart Of Darkness.** He was assisted by Jérome Combe, **Patrick Daher and** Stéphane Hamache

have to collect them. How long it will take to complete the game is still uncertain, but Frédéric hopes that players will return to the game time and time again, lured by

The Blob's drooling, nasal voice is

one of the highlights of the game

Those visuals are perfectly complemented by the game's aural components. The pre-rendered sequences feature 22KHz 16bit stereo sound interleaved with the

the seductive visuals.

graphics. Sound is perhaps the only aspect of Heart Of Darkness that wasn't planned to the last detail years in advance. Although a script was needed for rough lip synchronisation during rendering, it still hasn't been determined which actors will provide the final dialogue. The finished game will be released in French, English, German and Japanese, and different voices will obviously be required for each version (Amazing is currently working with a London-based production team on the English dialogue). Some big star names are being bandied

around by Virgin for speaking roles in the game, but no final decisions have been made yet.

Strangely, considering

that they've just spent most of the last three years working on an innovative new method of sprite animation, Eric and Frédéric don't believe that sprites represents the future of videogames. 'Realtime 3D is the way forward,' Eric states firmly. However, the duo reckon that the mixture of 2D gameplay and 3D cut-scenes in Heart Of Darkness works well (although, as







Andy is surrounded by spectres and tries to escape by clambering up a dinosaur ribcage (above). Note how every character casts a shadow which is distorted according to the surface on which it falls

Negotiating each of the 256 screens requires a variety of tactics. Locating objects, storing them and using them later is a crucial part of the gameplay

Frédéric accepts, 'lt's hard to do both well').

Eric thinks the notion that
French games have a unique
style is exaggerated.
'I don't think that French
games are inherently
different,' he argues.
'There's no
French style per
se. It's different
styles of
different

software houses.'

Be that as it may, titles like Another World, Little Big Adventure (Edge 17) and, now, Heart Of Darkness provide evidence of the alarming concentration of talent across the Channel.

So, does Heart Of Darkness
represent a major step forward
for Frédéric Savoir and Eric
Chahi? 'Oh yes,' they both say
quickly. 'Each time we
enhance the techniques.
We're always aiming for
more playability,
for better
control. We'll
start playtesting
Heart Of Darkness

soon and that's vital. It's all about the way you feel — is the game nice to play or not?"

That, of course, is the crucial question. If the gameplay matches the obvious quality of the visuals, Amazing will surely have a major hit on its hands.

Credits

Main team:

Eric Chahi

Frédéric Savoir

Christian Robert

Fabrice Visserot

Daniel Morais

Additional team:

Pascal de France

Jérome Combe

Patrick Daher

Stéphane Hamache

Chris Delaporte

Jean Frechina

Francis Piérot

Music: Bruce Broughton

Sound editor: Patrice Grisolet

Sound designer: Eric Mauer

Foley artist: Alain Levy

Executive producer:

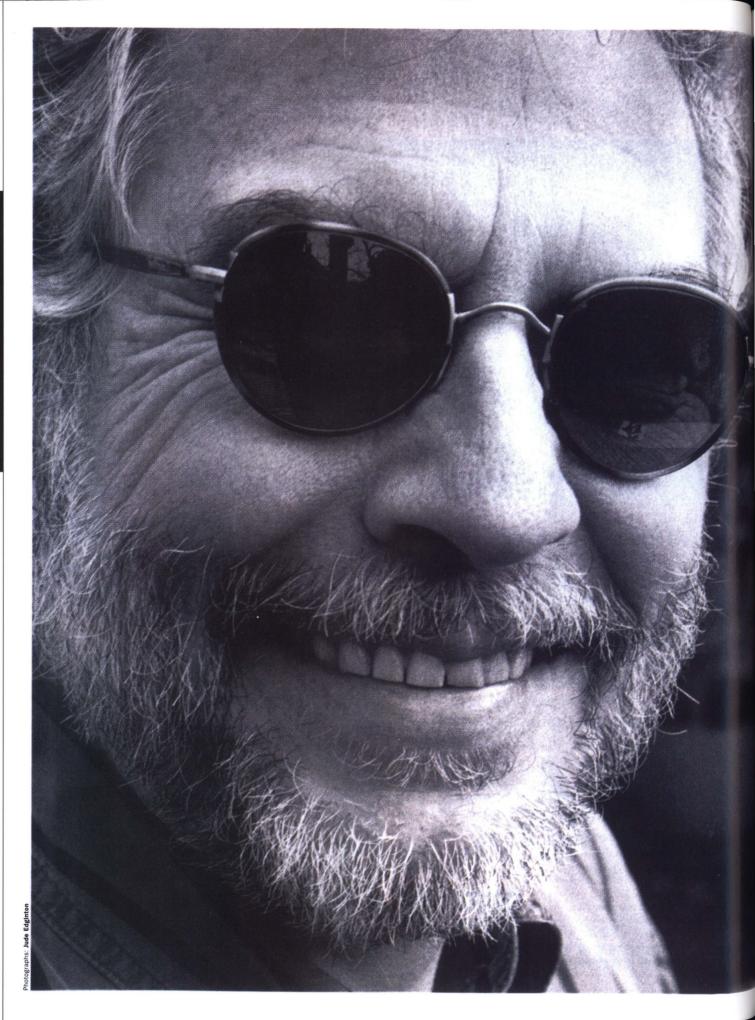
Jon Norledge



Amazing's Paris headquarters. A real buzz of excitement pervaded the office as Heart Of Darkness neared completion. Release is scheduled for fourth quarter, 1995



Atari's trailblazing founder Nolan Bushnell remains as ebullient as ever, claiming to have discovered a way of getting females to play games, that Sony is doing nothing to move gaming forward, and that the future is all about massively multiplayer scenarios, with up to 20m people tuning in to TV coverage...



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ven if – strictly speaking – Nolan Bushnell didn't invent videogames, he certainly let the genie out of the bottle. And he seems to have been blessed with three wishes, too. First, in 1972, he founded Atari with just \$250. Then, four years later, he sold it to Warner Communications for a cool \$28 million. Second, videogames formed the basis for Bushnell's next creation, Chuck E Cheese

could be about to come true.

Edge met Silicon Valley's most celebrated entrepreneur to glean his unique perspective on the state of gaming in 1995.

– an empire that in 1981 incorporated 278 restaurants and made Bushnell personally worth \$100 million. And now his third wish

Edge How do you feel about being described as 'the man who invented videogames'?

Nolan Well, I've always felt that this wasn't necessarily true. Maybe as I get older I get more modest, but we stood on so many other people's shoulders. What I did was popularise it. I was the guy who saw this stuff in the computer labs and said, 'Gee, you know, normal people would like this kind of stuff too.' So I'm the metaphorical poet who interprets the gods to the masses — in this case technology. And so I kind of see myself as being that middleman who interprets, as opposed to the grand inventor.

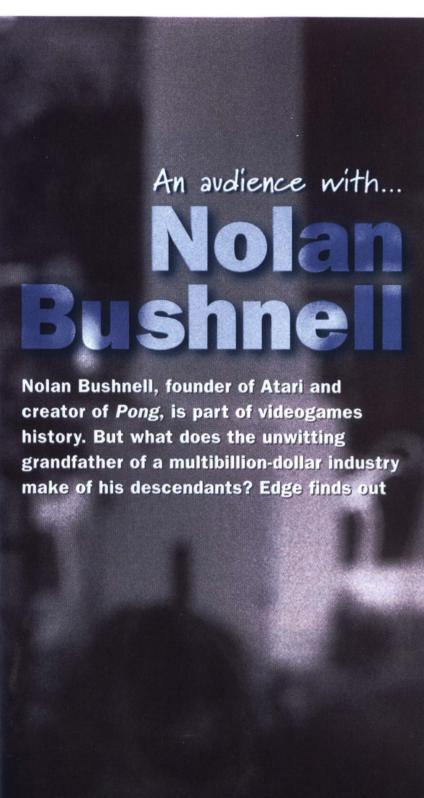
Edge Do you think that you've done the world a service?

Nolan Yes and no. Like anything that has an extreme impact on society, there are benefits and problems. There are certain aspects of videogames which are problematic, particularly when played to excess – anything done to excess can become a problem.

Edge Have potential health problems always been a part of the gaming experience – even since *Pong?* Or do you think that the problems have only come about as the games have become more realistic?

Nolan I think that even with the very first games there were problems of overuse and a disproportionate allocation of resources. **Edge** You mean people spent money they couldn't afford...

Nolan Right. There were a few *Pong* bums I'm sure who became addicts. I think that people have always enjoyed simulations, and as simulations become more graphic and more real, the fantasy becomes more intense. There's a growing body of work that shows that violence on TV or in games has virtually no effect on the average person, but with certain mental types it can be a trigger point.



interview

And so you have to ask if you want to censor something for the mainstream (on which it has no effect) to keep it away from a minority of the people on whom it does encourage behaviour problem. These are questions for politicians, not scientists.

Edge Do you still play games?

Nolan Yes, a lot.

Edge What do you play?

Nolan I find that I like games which have a new look, a new feel, a different world. And I particularly look out for games which have a certain mathematical balance to them - Tetris is one that I found to be topologically and mathematically very satisfying. Extremely so, in fact. But at the other end of the scale, I most recently found Myst to be highly satisfying.

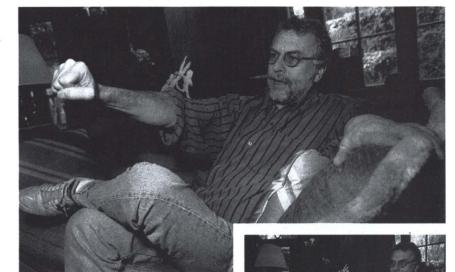
Edge Myst was seen by many gamers as a non-event. It looks good, but there's little gameplay. So what do you like about it?

Nolan Well, the immersive characteristic of the world made it. The puzzles were intriguing and well integrated into the narrative - even though there wasn't much in terms of narrative. The world was compelling and believable. And the puzzles were believable in their mix into the world. And the art and sound was excellent.

Edge Are you surprised that the games industry has become so big? Or are you surprised it has remained so small?

Nolan I had no perception of what big was and what small was when I started. Starting a company and having it grow to \$3-5 million was about as big as my horizon was at that time. If someone had said \$8 billion in the US and \$5 billion worldwide bringing in \$13 billion dollars, I would have said, 'Wow!' And if you had said that, per year, it would be bigger than all of Hollywood's movies combined - by several times - you would have seriously stretched my sense of credibility. So, no, I didn't anticipate it at all. Edge What do you think have been videogames' greatest achievements over the last 20 years?

Nolan Games, because of their fast action and realtime nature, have always had to remain faster and better than the standard computer business. If you really look at the very early games we did, there were no actual 'computers' at all. Pong and Tank were solid-state machines - at the time you couldn't get a computer to execute instructions fast enough. It was almost five years after the videogame was introduced that there were any serious microprocessors, and then there were so many hardware assists that the fact that there were microprocessors in there was almost insignificant. And so what happened is that, as the processors started to catch



up with the requirements of the game systems to do the executions that were

necessary, the game business pioneered the methodologies and probably set the computer business forward five years. Edge You're saying that the

games industry dictated the pace of computer technology development, not vice versa?

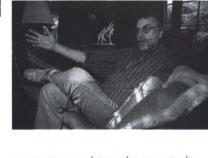
Nolan Right. Because most of the hard technology was developed on the games side and then ported over into the computer side. So that's

probably one of the major things that the game industry did. Another real tour de force has been the software created to handle simultaneous graphics and sound that's hard stuff. And that has, in turn, paved the way for some of the conference call and picture compression technologies. Edge Any specific titles spring to mind?

Nolan In terms of things that have been really trick stuff, Doom was something that could have been done before, but the overall effect that was achieved with a relatively truncated and closed environment really surprised a lot of us. Edge That's technological enhancement, but how about what makes the game itself? Do you think gaming has evolved?

Nolan Yes. In 1995 there are many more things that are known about what makes a game tick. But the problem is, the human being, when it comes to leisure, is a fickle sort. And no sooner do you think you have them figured out than you lose.

Edge What still needs to be accomplished? Nolan No-one has really figured out what the 'she's' really want. And the 'she's'



represent a very interesting opportunity for all of us. It turns out that I think I've actually figured it out. It came to me not through any great insight of mine, but through observation of my daughter. I have three daughters, one ten and two older, and none have been that interested in games. Whereas all my sons are. And then one day I came home and my daughter was down in my lab with a bunch of friends, just laughing and chuckling. They turned off the machine as soon as they saw me, but I turned it back on and finally I was able to figure out what she had been doing. All of a sudden it was like the light comes on... Edge But you're not going to tell us what that is?

Nolan I know I'm been purposefully vague, but all will be made clear this fall.

Edge You're famous for having attended the early Atari board meetings in sneakers and Black Sabbath T-shirts. Most of the staff were hippies and it's been said that the smell of marijuana wafted through the air conditioning. You described Atari's employees as 'people who wanted to make games, not bombs'. Do you think that a small, idealistic startup as unique as Atari was in the early 1970s could thrive today against Sony and Nintendo?

Nolan I don't think entrepreneurship can ever be stopped. But at the same time, there is, as sure as I'm sitting here, a startup in a garage somewhere that will be significantly more successful than anything that is out there. I have no idea who it is. but it's out there. There is also a major shakeout that will happen over the next ten years in the games business. And that is the transition from 'closed' to 'open' systems. No closed system has survived longterm, in history, in virtually any kind of marketplace. There can be cartels in certain situations - the De Beers diamond mines, for example - but when it comes to something as interesting and as different as information (and games are nothing more than information) it can't be controlled. and ultimately the barriers will come down and the systems will become open. And maybe what we're really seeing when you say that you can't sell a 3DO for \$700 but you can sell a whole bunch of PCs is the first javelin over the walls of the world devolving into an open system.

Edge This is also Trip Hawkins' opinion. Do you think Trip is on the right track with the rest of his 3DO plans?

Nolan Well, I liked to tease Trip by saying, 'Gee, Trip, I found out with three million dollars what has cost you over a hundred million dollars to find out!' And that is that it's very difficult to sell significant numbers of anything at over \$500. In the 1980s, I sold some technology to Commodore and spearheaded their movement for CDTV. Almost four years before 3DO, I had a machine which, to all intents and purposes, was equivalent to 3DO. I felt that I could sell a hundred thousand of something that costs \$800 standing on my head. And I can tell you that the number of units that we sold in the United States at \$700 you could put in your eye and not draw tears.

Edge So why are so many people willing to spend \$2500 on a PC purely to play games? Nolan I think that it's impossible to divorce the business potential or the perceived business potential from the PC. Edge So people are buying these machines, kidding themselves that the expense is worth it because they might use the technology for business and not just games? Nolan Nobody buys a computer,

everybody buys software. The computer just happens to be a harassment that is necessary to play the software.

Edge The next generation of games platforms - PlayStation, Saturn and Ultra 64 - are all 'closed' systems. Are 1995's gaming moguls making a mistake?

Nolan I can't really say that keeping a closed system in the short run is wrong. It's a way to create tremendous cash flows and profitabilities. You can build a very good coffer. If I were them, though, I would be very concerned about how I would make the transition to an open system.

'I liked to tease Trip by

out with three million

over a hundred million

dollars to find out!"'

saying, "Gee, Trip, I found

dollars what has cost you

And that's gonna be very dicey, because big corporations don't eat their babies very well. And what I mean is that you can't do things that are important to your future without hurting

your current business. The capital that is involved in the Sega and Nintendo name and infrastructure and all that stuff will be destroyed when the thing goes to an open system. So could you see Nintendo doing that to themselves? I don't think so.

Edge When you look at Atari today, what do you see?

Nolan I see a very powerful set of technologies. Unfortunately, what has happened is that Atari started too late to become a mainstream competitor. And it had a tremendous disadvantage because it didn't have the Japanese marketplace as feeder stock for games software. That put them at a disadvantage. It's not over for them. In fact, I'm trying to do some work on a couple of projects with them and it still could be pulled out, but it's going to take more than just good technology to do it. They will have to do some interesting marketing. They have to get to a couple million set-tops before they have the basic infrastructure to carry on.

Edge Do think that the Japanese companies have irreversibly overtaken US companies as the world leaders of gaming? Nolan There is a huge built-in gameplaying population in Japan that allows the domination - or at least a significant financial benefit - to any company that has access to that. And foreign companies have difficulties addressing that market.

Whether over time the Japanese market can be more open is anybody's guess. But we do see a tremendous amount of things happening, with Apple moving there and regular DOS machines increasing in number instead of the bastardised DOS they've been using for years, 3DO has done well there too. So I believe that the way that American companies will penetrate the Japanese market is going to be through the open gaming platforms, such as the PC.

Edge Is the arrival of Sony, the first 'outside' company to enter the videogames arena, a good thing?

Nolan It could be good for consumers if Sony did it the right way. But I see no sign that they're trying to do it the right way.

> There are so many things that need to be done with games that are interesting and fun and that people would want to do; things that have very little to do with slapping a cart in a slot and playing with the joystick. That's clearly the

market now, but they're doing very little to create the market of tomorrow.

Edge It's ironic that Philips - a mainstream electronics company - makes a multimedia machine, whereas Sony - the world's biggest multimedia company - makes a pure games machine...

Nolan It's really bizarre that Sony has innovated so narrowly in the existing field. They basically entered the polygon war, and that's about it. They've got some pretty good software titles, but I always look at businesses that are really pushing the state forward in terms of innovation.

Edge Presumably, networking is the next big thing in videogames...

Nolan Communication, when added to the witches' brew of high MIPS in the living room, leads to a whole new set of things, which I think will become dominant. I'm going to be so bullish as to say that the non-linked computer will be obsolete in five years. My goal is to have 10,000 people playing against 10,000 people. And to have it televised, and to have interviews with some of the leading contenders. When you get that many people involved in anything, just by extrapolation of your parents and girlfriends and boyfriends, we could probably create a viewership of 10-20 million without even trying.

Edge It's a fantastic concept. The problem is giving each player a meaningful role...

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interview

Nolan Right. And you do that through what I call the 'bubbling pot method of participation'. It's kind of a dynamic double elimination. It will all be clear shortly. Edge A lot of other people think the Holy Grail of gaming development right now is the interactive movie - a computergenerated world so realistic that it might as well be a movie, in which you play the lead. and you decide what happens. What is your opinion of the 'interactive movie'?

Nolan I believe there are some interesting disconnects. If you take a traditional movie, the objective is immersion. You want to get the person so involved in the reality of the characters, of the situation, of the dynamic, that you lose self, totally, and become an observer; it becomes a fantasy roleplay. But the minute you ask the person to respond, you force them back into their self. And that's a disadvantage to the whole 'interactive movie' concept, it seems to me.

When you're playing a traditional game, again you're in a different kind of immersion. But it's an immersion in which the joystick retreats - like when you type but you're no longer thinking of the keyboard, but of letters appearing on pages, and the intermediate apparatus goes away.

Again, loss of self. And so you say, 'Well, gee, loss of self in a traditional game, loss of self in an interactive movie' and you weigh up the two experiences I outlined. 'They're about the same,' you think. But they're fundamentally different because that loss of self on the game side doesn't happen instantly. When you first pick up the joystick, you were thinking very well, it's only through the compellingness of the game that you lose self in the manipulation. Edge So is the 'interactive movie' concept fundamentally flawed?

Nolan I have a chart downstairs that I used for a speech, half humorously, in which I plotted button clicks per hour as a measure of interactivity. The highest activity is 10 per second (that's a highpaced videogame) and at the other end of the scale is once every hour and a half (that's the play button on the VCR). We have well defined the once every hour and a half as a market and we have well defined from ten a second up to a couple hundred a minute. But in the middle area, the netherworld, between 10 a minute and one in an hour and a half, is very unexplored territory, and the world is littered with the decaying bones of attempts in that area. I cannot think of a single success.



Now, I don't believe that the world is that disconnected, I believe the world is a continuum. Very seldom do you see statistical distribution like that. So I believe there's something there too. I just don't believe we've come close to discovering what it is yet.

Edge Do you think that games are now more fun to play than Pong was?

Nolan Yes and no. In some ways because of technical limitations - we had to focus exclusively on the essence of game, not production values. And so we spent tremendous amounts of time trying to do things like calibrating how much a quarter turn of the control dial resulted in how much movement on the screen. Why does that matter? Well, it turns out it matters quite a bit because certain people have very good muscle skills and some people don't. And you wanted to match that. And you didn't want to have them turn too far, because then there would be wrist problems. There are so many tiny issues in a game that literally you could change 10% and double the revenue of the coin-op. Edge And the arcades of today are lacking

some of this craftsmanship?

Nolan Well, the coin-op side also had a very interesting capability that seems to have been lost, in that it was the way

games were presented to the public first. And then the game migrated to the consumer side. Right now coin-op games have been relegated to a driving game and a ninja punch-kicking game. You don't find anything else out there. Plus the arcades are increasingly becoming a sideline - fewer and fewer people go to arcades. The people that do go spend increasing amounts of money, but it seems like it's filtering itself to oblivion. And I think the coin-op business needs a huge reset, because so many of the games are just not fun to a majority of the people. And so the typical person happens to wander into an arcade to see what's happened in the last 10 years, looks around, shakes his head and says, 'There's really nothing in here for me.' I think that's bad, I think it's a real problem.

Edge Whereas Pong was for everybody?

Nolan Pong had an interesting characteristic. Since there was no oneplayer version, it was in fact a social lubricant in many instances. It was very common to have a girl with a quarter in hand pull a guy off a bar stool and say, 'I'd like to play Pong and there's nobody to play.' It was a way you could play games, you were sitting shoulder to shoulder, you could talk, you could laugh, you could challenge each other - that sort of thing. Edge You also had one hand free to hold your beer, or whatever...

Nolan Yes. And in fact, as you became better friends, you could put down your beer and hug. You could put your arm around the person. You could play left-handed. In fact, a lot of people have come up to me over the years and said, 'I met my wife playing Pong...'

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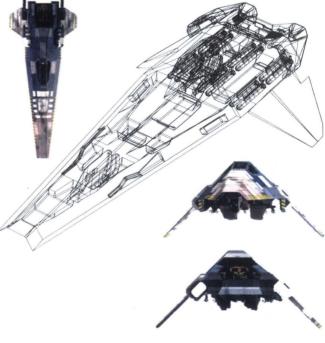


Some industry observers suggested that Sony was foolish to pay many millions in buying Liverpoolbased developer Psygnosis, which had a track record for pretty but often shallow games, but the company's first PlayStation title appears to have gameplay to back up some expectedly dazzling visuals.





Images of Wipeout: mock-up screenshots (above) are a pretty fair representation of how the finished game will look. SoftImage SGI software has played a major role in creating the 3D ships and courses (right)





Wipeout



The Wipeout racecraft, shown in various stages of evolution (from top): a Softlmage wireframe model; the stripped-down PlayStation version; a flat-shaded PlayStation polygon ship; a fully SGI-rendered vehicle; and the original plastic model, constructed by artist Jim Bowers

Psygnosis' futuristic racer will be available in time for the UK launch of the PlayStation in autumn. **Edge** met the Liverpool crew to see how *Wipeout* could bury the firm's 'great graphics, no gameplay' tag once and for all

W

ith Psygnosis now part of the Sony empire, it's no surprise that the

Liverpool softco has had a head start in developing for the PlayStation. By the launch of the UK machine in September, it will have four releases ready – the most prominent being Wipeout, its Ridge Racer-beater, which was started in earnest last March.

Set in the future, Wipeout blends elements from F-Zero, Crash 'n Burn and the innovative 16bit

Amiga/ST title *Powerdrome* to form what, even at this early juncture, looks like being the most exhilarating PlayStation title yet.

To the standard racing theme Wipeout adds violently undulating roadways and the option of using weapons against your opponents. The PlayStation hardware enables Psygnosis' programmers to generate Wipeout's stomach-churning visuals in realtime — with a screen update that never drops below 30fps.

Wipeout is the brainchild of artist **Jim Bowers** (the man responsible for much of the

rendering in *Microcosm*) and game designer **Nick Burcombe**. 'The idea was to make something very fast with lots of 3D movement,' says Nick. 'A big influence was *Powerdrome*, which was a good idea but didn't have the technology to do it justice, but *Wipeout* is a very different game – there are elements that make it unique.

'The plot isn't really important,' he continues. 'The point is that while you're playing – certainly with the internal view – the bigger the screen the more gut-wrenching the game, once we get the huge drop-offs and the

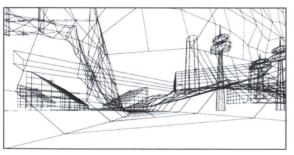
Psygnosis

rolling around effect. It's more the movement and making the player have real control in the 3D environment, rather than feeling that they're stuck to the surface and not really responding in the 3D space, like many car games'

In Wipeout, the player's craft is magnetically suspended in a trench which guides it around the course. Punctuating the track are hills, valleys and jumps — miss one of these and you incur a time penalty, as robotic crash vehicles tractor beam your ship slowly back on to the course.

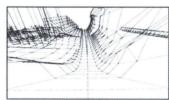
Like Formula 1 racing, there are four major constructors in Wipeout, each of which sponsors two identical vehicles, with eight craft competing in a race. A points system provides the means of progressing through the ranks.

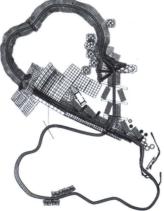
But as well as the guile and cunning of FI competition,





Wireframe course models can be 'flown through' in Softlmage (above) to ensure they work before porting to the PlayStation







Each course is first designed on paper by Nick Burcombe (right). A 3D wireframe model is then produced in Softlmage (left), prior to PlayStation conversion



Wipeout relies on other ways of getting ahead of your opponents. 'Weapons play a major part in the twoplayer game,' explains Nick. 'The computer opponents all respond in the correct way – they all have their own styles of combat. The one in the very heavy craft perform a lot of blocking manoeuvres and cutting in front of you, and there's one that's very manoeuvrable, but they're excellent with weapons as well.'

Best of all, though, the game will make use of the PlayStation's serial link capability (the cable is due soon in Japan) for a potentially lethal head-to-head mode.

Wipeout boasts ten full tracks, split into two racing classes. The first five courses are



These shots of the first course are mock-ups; however, Edge played an early version of this very track

for amateurs, and allow players to hone their skills before moving up to the next five, which are much bigger and include alternative routes and secret paths.

All of the tracks are first designed on paper and annotated with scenery ideas and course elevations. These are then passed over to the artists who render the course in 3D, using Softlmage software running on SGI systems.

A lot of care has been expended on designing the courses so that they mask the PlayStation's limited drawing horizon. To avoid situations like in Ridge Racer – and, to a greater extent, Daytona USA – where the scenery suddenly appears in front of you, the artists use trackside scenery and the twists and turns of the course to either hide points where the player can see too far

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into the distance or to draw the eye away from a point where scenery might appear. A completed course can be 'flown' along in Softlmage to check that it will work without any problems on the PlayStation.

Completed courses are then ported over to the development hardware, using software coded in-house. 'In order to meet the deadlines, people have had to create their own conversion tools rather than using thirdparty tools,' states Jim Bowers. 'I think it's been a big learning experience for the programmers, because they probably know Softlmage completely inside-out by now!'

Time invested in dedicated Softlmage software has proven invaluable, as Nick Burcombe attests: 'The tools also include materials, lighting, texturing - all that stuff is generated for the PlayStation out of our own tools. They are re-useable as well. Stuff like capturing the lighting across the tracks - that's not something we have to get the PlayStation to do any more.'

Producer Dominic Mallinson concurs: 'The only thing that's not going through Softlmage is the dynamic play adjustment features, which are specific to bits of the track. Otherwise everything is being modelled in Softlmage.' And Softlmage looks to be a permanent addition to the developer's









Shots of the rendered Wipeout sequence produced for the MGM movie, Hackers. The hi-res SGI footage doubles as a state-of-the-art videogame played by the film's protagonists

Adding to the flook and feel' of Wipeout are corporate

and feels good - that's the

important thing."

emblems and logos generated by top design agency The Designers Republic. Their futuristic pseudo-Japanese styling should add considerable dynamism and believability to the proceedings.

Psygnosis also has plans to up the marketing stakes for Wipeout. Trackside billboards - like those promoting forthcoming Namco titles in Ridge Racer - may well be taken up by real-world advertisers. And several minutes of Softlmagerendered Wipeout footage is the focal point of a game sequence in the MGM movie Hackers.

Music, too, is more than backseat audio, as Glen O'Connell, responsible for UK PR at Psygnosis, explains: 'Sony Music have given us the use of their catalogue, to get a host of different dance bands in the vein of Leftfield, Apollo 440 and so on. We want to get some names behind it, because the plan is to launch a compilation CD at the same time as the game. That sort of thing sells very well in Japan.'

With marketing, music, design and graphics all falling into place, the only unknown factor is gameplay. And from Edge's early taster of the game, Psygnosis seems to have that in the bag as well.



The finished game will sport a variety of trackside bil!boards - all boasting real-world, paid-for advertising, if Psygnosis' plans come to fruition

Credits

Producer: Dominic Mallinson Product manager: Sue Campbell Team leader: Nicky Caruss-Westcott Game designer: Nick Burcombe Concept artist: Jim Bowers Intro artist: Lee Caruss-Westcott Graphic artist: Louise Smith Graphic artist: Laura Grieve Graphic artist: Darren Douglas

Programmer: Dave Rose Programmer: Rob Smith Programmer: Jason Denton **Programmer: Stewart Sockett**

PDC: 2

Games have taken inspiration from movies, TV series, even bands (remember Ocean's Frankie Goes To Hollywood?), but not yet the world of opera, something being addressed by strategy-game pioneer Mike Singleton in an RPG making use of voxels to create sprawling snow-capped vistas.

The Ring Cycle

10 years after Lords Of Midnight, Mike Singleton's Maelstrom team is refining the graphic adventure even further with a title based on Wagner's Ring Cycle saga



Voxel landscapes, polygonal characters and picturesque weather conditions combine to give *The Ring Cycle* its visually individuality

Format: PC

Publisher: Psygnosis

Developer: Maelstrom

Release date: June

Origin: UK



Unlike the majority of Mike Singleton's previous efforts, *The Ring* Cycle allows the player control of just one character

the Domark title – a realtime Voxel based 3D system, albeit with a *Doom*-style engine for interiors – but Mike is keen to emphasise the basic dissimilarities between the two games.

'There's a fundamental difference in what the player is doing from moment to moment,' he explains. 'Lords Of Midnight is very strategic, whereas this is more akin to single-player RPGs. There's more of an arcade game style of presentation employed on Ring too.'

The game revolves around the series of tasks which Siegmund has to

The various tasks are interwoven with a multitude of objects and characters, resulting in a complex web of adventures in which the player can get embroiled

aelstrom ringleader
Mike Singleton has
become associated
with epic games. He
first rose to fame over
a decade ago with the
legendary Spectrum adventure title
Lords Of Midnight, for the now
defunct developer Beyond. Since then

Lords Of Midnight, for the now defunct developer Beyond. Since then his Maelstrom team has been responsible for a clutch of ambitious projects, including Midwinter, Ashes Of Empire, and the soon-to-be-released Lords Of Midnight 3 for Domark.

The Wagner-inspired The Ring Cycle has the same graphics engine as



Maelstrom's landscaping system produces very impressive results. Detail and smoothness can be compromised for slower machines

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A dragon arcs across the winter skyline. In one scene, the player actually gets the chance to control one of these majestic winged beasts

undertake in order to defeat Anvari and liberate the gods. The various tasks are interwoven with a multitude of objects and characters, resulting in a whole web of adventures in which the player can get embroiled.

Mike Singleton is famed for producing multi-character adventures in which the player gets to direct a band of mythical leaders. 'This is a bit of a departure in that it's very much a single-hero game,' reveals Mike. 'The focus makes it more of an arcade game in some senses. There are, however, moments where Siegmund magically transforms into the other characters - a Valkyrie riding a flying horse, a Rhine maiden, even a dragon.'

Surprisingly, the game's plot doesn't adhere rigidly to that of the opera. 'We've used the same characters and the same objects which crop up in the original story,' says Mike. 'But we decided that sticking too rigidly to it would make it less of a game - the player would always know exactly what would happen next.'

One key aspect hasn't been changed, however: 'If the player actually succeeds in the quest then the hero does die, just like in the opera. It adds a nice twist to the game,' laughs Mike.



The graphics engine provides a particularly satisfying depth of field

Because of the multitude of interwoven strands, the game is far from linear. 'There are various chains of events to enact, but it's not a single pathway game,' elaborates Mike. 'The player has a fairly broad choice of how to approach things."

With such a free-ranging environment on offer, Maelstrom has hit on an ingenious device to prevent the player straying too far from the plot: occasionally, the voices of the gods chime in, offering help, setting up major quests, and, of course, further enhancing the atmosphere.

In play, the game offers a balance of roaming through the lush 3D environment, communication with the assorted individuals who populate the lands, and close-quarters combat. A RPG-style system is used to fight the major characters, while taking on the more common creatures in the interior locations is presented in a more arcade-style manner.

The final icing on the cake promises to be the sound. 'We're actually using a rendition of Wagner's music,' says Mike. 'It's not the whole thing - that lasts 13 hours! We've concentrated mainly on The Ride Of The Valkyries and actually had a fully orchestrated version recorded.' It's rousing, emotive and truly epic exactly what Mike Singleton and his Maelstrom team have in mind for the game itself.

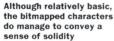
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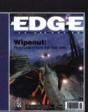






Interaction with characters from a number of outlandish races is essential in order to make headway





It is now almost two years since 3D0 began sharing its vision for a worldwide console standard that would be licensed across multiple manufacturers, but progress has been slow, partly due to the console's price tag. With cheaper models appearing, and the M2 module on the horizon, how is the dream holding up?







3DO: The story so far

The Panasonic FZ 10



Manufacturer: Panasonic
Price: TBA
Release: May

anasonic's remodelled 3DO base unit, the FZ-10, appeared in Japan last year, its sleek new lines and competitive price ensuring that interest remained buoyant in such an important territory. Completely restyled, the machine's biggest change lies with its CD system — the front-loading tray mechanism has been replaced by a less costly lid system.



The AV expansion port which appears on the right side of the machine (above) will accept the eagerly awaited M2 accelerator, resulting in a snug-fitting Mega Drive and Mega CD look. The FZ-10's power switch (right) has been shifted around from the front to the left side, for no apparent reason





Panasonic appears to have gone backwards rather than forwards with the redesign of its 3DO – the FZ-10 has a look strangely reminiscent of NEC's ageing PC Engine Duo console. Access and power LEDs remain largely unchanged



The rear of the machine holds few surprises, but there's no RF socket in evidence. From left to right: de-bugging/country code protection switch (available on press and development machines only), S-VHS port, composite video and audio (I and r) ports, expansion port, power cable socket

t was the best of things.
It was Trip Hawkins'
baby and it was the
future of videogaming.
When details of the 3DO
format and screenshots
of selected titles began to appear in the
games press in late summer 1993, it
seemed as if the videogames world was
finally on the brink of that oft-discussed

It was the worst of things. Within a few short months the pre-launch hysteria was followed by post-launch disappointment. Many who had subscribed to the 3DO vision were left with a bad taste in their mouths and bad jokes on their lips – of which '3 Dozen Ordered', '3DOA' and '3Doh!' were the most viciously funny.

utopia - the industry standard.

But all proved to be wide of the mark. Despite the rollercoaster ride 3DO has experienced since its conception, reports of the system's demise have been greatly exaggerated. Worldwide sales of well over half a million units to date show that 3DO is alive and – in some respects – kicking.

The eventful, headline-grabbing

history of 3DO can be explained by what Americans call 'The Vision Thing'. Bill Clinton had it; George Bush didn't. Trip Hawkins had it and set about building the entire 3DO format on his own personal 'vision thing'. The concept appealed to everyone. A standard akin to VHS or CD audio, a huge performance leap from 16bit and the support of major players like EA,

'People built up the

without us having to

Bob Faber, managing director, 3DO Europe

hype around us

say anything'

Matsushita and AT&T. Then there was Mr Hawkins himself. He had made Electronic Arts the biggest entertainment software company in the world; if anyone knew the

games market, surely he did. Finally, there was the software. Screenshots of EA's Shockwave, Crystal Dynamics' Crash 'n Burn and other dazzling-looking games were like manna from heaven to an audience tired of the clone-u-like 16bit software scene. Little wonder, then, that 3DO needed no help in selling the vision.

'People built up the hype around us without us actually having to say anything,' explains 3DO Europe's managing director, **Bob Faber**. 'We spent a lot of time trying to calm down people's expectations, saying "Wait a minute, this doesn't happen

overnight, it takes time". One of the reasons why we had to launch early was because we knew it would take a long time to get established.' But Faber admits that 3DO couldn't possibly have lived up to people's initial expectations. 'We knew it was a risk, we knew we didn't have enough really great software but we had to do it.'

18 months down the line, the 3DO vision is still strong; according to Faber it's only short-sightedness that has led people to write off the system. 'The thing that we've done that people fail to realise is that we have taken a really big lead in this generation when we weren't even on the map two years ago,' he argues. It's certainly true that while 3DO was busy building a market for itself, its competitors stole publicity from under its nose. Itself a sour indictment of the fickle videogames industry, 3DO has been subjected to overthe-top hype followed by over-the-top criticism. Now, the company believes, such difficulties are in the past.

The birth pangs of 3DO are over and now the format faces its biggest challenge with the impending arrival of the Sony PlayStation and Sega Saturn. It's a challenge that all concerned with 3DO feel they're ready to meet. 'I think that 3DO can compete favourably,' reasons Panasonic UK's general manager, Bob Tate. 'It's going to be tough – our competitors are big, responsible companies and they will make an impact on the marketplace. We'll move from a position where we have a product that is relatively unique to one where there is much closer competition.' 3DO may not have the market to itself for

much longer but its conviction is still strong and it's this that will decide the system's future more than anything else.

Sony, Sega and Nintendo are playing a game that the interactive

entertainment business knows and, for better or worse, trusts in varying degrees. In the console industry ('the toy model', as Trip Hawkins dubs it), a piece of hardware is flogged for a limited timespan and then dropped in favour of a new machine a few years later. 3DO's strategy has established a freer, more democratic market. Faber insists that 3DO's lower development costs and potential for greater profit margins is the way forward for the industry as a whole and a crucial factor in the company's strategy.

However, Bob Tate freely admits that

this approach has left 3DO looking less dynamic than Sony and Sega. 'In the short term, I think it's fair to say that it makes life more difficult, as from startup a single company can be very dynamic. However, I think you'll see where more people are involved in a wider range the benefits escalate accordingly. You get a slower start but a faster second phase.'

For Tate, the 3DO vision is something that both the industry and the consumer have to get used to. 'Expectation is on a



Goldstar is the only manufacturer to alter 3DO's much-criticised joypad design

fast turnover in product. That isn't our style and both the customer and ourselves are having to get used to where that leads us. Us in terms of having to move more quickly to upgrade and develop and the customer in terms of looking at something that provides him with longterm stability.'

The word 'longterm' crops up with revealing regularity when any of the major companies involved with 3DO discusses the system. The combination of a large number of manufacturers and scalable, constantly evolving architecture remains the bedrock of 3DO. 'When you think about 3DO it's much better to think about it the way you think about a PC as a foundation and not as a point product like a videogames system,' explains Bob Faber. 'We know we can extend the product and have it evolve through time; they already know that they can't do that with theirs and they're willing to make a point product and replace it with something else later.' With the PC totally dominant in the computer market, it's a comparison that 3DO is keen to play up.

Sales of over half a million units are significant but, as Panasonic and 3DO are happy to admit, it's still strictly early-

7

3DO: The story so far

The Sanyo TRY

Manufacturer: Sanyo

Price: ¥54,800 (£385) **Release:** Available now (Japan)

he Sanyo machine is currently only available in Japan, where the Japanese company is also publishing its own 3DO software. With its sleek, curvaceous lines, it's arguably the best-looking of the three available 3DO systems.

Taking a hi-fi separate as its inspiration, it features a front-loading CD tray which, rather than just acting as a caddy to transport the disc into the machine, actually houses the drive mechanism itself. Sanyo has yet to announce its launch strategy for the US and Europe.



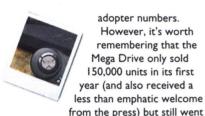
A side-on view of Sanyo's TRY machine (above) reveals a rippled styling which is completely at odds with the rest of the family's straight, clinical edges. The standard AV expansion port (for M2) lies beneath a plastic cover





The rear of the Sanyo TRY machine is clean, uncluttered and much the same as all the other 3DO models. Left to right: expansion port, S-VHS port, composite video port, audio (left and right) ports, power supply cable.





on to capture the lion's share of the 16bit market. What is there to show that 3DO can make it to the big sales league? On the hardware front, 3DO's principal strength is that it has partners big enough to absorb the high initial costs and relatively low turnover in the early life of the format. Panasonic, part of the \$60 billion Matsushita conglomerate, and Goldstar, a brand of the \$40 billion Korean Lucky Goldstar Group of Companies, are both committed to the format. 'Matsushita's not a company to back off from an investment,' says Panasonic's Tate. 'It is very early days



Trip Hawkins' alma mater, EA, has distinguished itself in the 3DO software business with games like John Madden

with the product and to us it's a longterm product. In five years we would see it as a mainstream entertainment product.'

After Sony broke with Nintendo, it decided to go it alone and create its own format from scratch. In contrast, 3DO has given Panasonic, Goldstar and other manufacturers like Sanyo a low-risk opportunity to buy in to a format which has already undergone the expensive development process and has the potential for greater things. It's something that Goldstar UK's Andrew Chorzelski recognises. '3DO has offered us a relatively quick gateway into the market. When we looked around at the technologies available at the time, 3DO gave us the most advanced and upgradable system.' Despite its initial concept of a multimedia player, Goldstar is keen to promote its machine as a games-plus format, even including a free Kodak Photo CD voucher in its launch bundle. 'Games, first and foremost, remain the reason anyone buys a 3DO. But if you're spending £400, the consumer has

the right to expect the machine to grow with them,' argues Chorzelski.

After keeping a very low profile at first, Matsushita appears to be finally putting some money behind 3DO with a \$15 million advertising campaign scheduled for this spring in Japan - a market where 3DO performed better than expected with sales of around 360,000 units before Christmas 1994. But a planned Panasonic MPEG I add-on for the 3DO has been delayed. 'There is so much confusion now that what we want to do is provide something that is front and back-end compatible,' explains Tate. A much more important factor in 3DO's longevity will be M2, a very powerful graphics engine which should raise 3DO's capabilities way beyond those of its immediate rivals.

However, 3DO itself is downplaying M2. 'I don't think that this year is a commercial event for M2,' says Faber. 'This year M2 is a showcase to prove that the foundation strategy is the right thing.' It's known that 3DO will make both major hardware and software announcements about M2 at E3, but right now the company is playing its cards close to its chest (it's understood that a roster of M2-powered coin-ops and original titles are already under way). Thus far it seems that 3DO is using M2 more as a spoiler than anything else. Sweet revenge for the drip-feed of PlayStation and Saturn details that Sony and

Sega supplied throughout the 3DO's first year onsale.

Whatever the future holds for 3DO hardware, the present price of the system severely limits its

potential audience. 'It is still the specialised gaming market rather than the more mainstream games/family entertainment market,' admits Tate. It remains to be seen if Sony or Sega will be pricing their consoles to appeal to a wider market, but right now 3DO is only hitting a few, wealthy punters. 'We're not appealing to the traditional early- to mid-teens market,' claims Goldstar's Chorzelski. 'The mean age seems to be 25-26. He's PC literate, has access to more than one videogames system and doesn't consider himself a "gamer".' Goldstar, Panasonic and 3DO itself are confident that, ultimately, their machines will break through to a wider audience (UK sales are around 20,000 units so far) and hardware prices will fall accordingly. 3DO has scope to reduce the



Samsung revealed a working 3DO prototype at the Chicago CES in mid-1994. Like AT&T, the firm is adopting a 'wait and see' approach

cost of its hardware, and it is expected that the company will be undercutting its competitors when they launch this autumn.

The seeds of longterm success are certainly there in the hardware but 3DO also needs something that has been relatively thin on the ground since the machine's US launch in September 1993 high-quality, original software. The old adage that software sells hardware still holds true and the quality of the 200-plus 3DO releases has, until now, been patchy. If anything has thrown doubt on Trip's vision, it's the fact that, after 18 months on sale, there are only a handful of 'must have' titles for the 3DO. The software house most identified with 3DO in its early days, Palo Alto-based Crystal Dynamics, has

> performed sporadically: flashy original titles like Crash 'n' Burn, Total Eclipse and Off-World Interceptor have been nothing more than short-term temptations, but faithful conversions -

Bob Faber, managing director, 3DO Europe

'This year M2 is a

strategy is right'

showcase to prove

that the foundation

like the Neo-Geo classic Samurai Shodown - have been well received.

Trip's alma mater, Electronic Arts, has distinguished itself, turning out a series of innovative, challenging and visually enticing games. Road Rash and John Madden Football were ground-up conversions that went way beyond the 16bit originals, and while The Need For Speed wasn't quite Ridge Racer or Daytona, it still gave good wheelspin. With FIFA Soccer, EA really moved the goalposts and produced the 3DO's first worthy game - in the UK, it's been selling practically at a one-to-one ratio with the hardware. (The title is held in such high regard that Goldstar is bundling it with its UK 3DO, which arrives in May.)

Bob Faber is characteristically candid about the slow flow of decent titles that

3DO: The story so far

The GoldStar 3D0

Manufacturer: Goldstar

Price: £400 (including pack-in

game FIFA Soccer)

Release: May (UK)

orean electronics firm Goldstar launched its 3DO model in Japan in October last year and in the States in November – where it recently claimed it was outselling Panasonic's own machine.

And it won't be long before another electronics giant feels the punch of Goldstar's marketing drive – it has licensed the CD-i technology from Philips and plans to have a compatible machine ready for launch later in the summer.



Goldstar's machine opens on the left side to reveal the AV expansion port nestling in a gaping aperture (above). 3DO will license future add-on technology to thirdparty manufacturers to ensure that each brand will have its own unique design and avoid potential incompatibilities. The unit (right) has an understated design compared to other 3DO systems





From the rear, it's clear that Goldstar has spent a significant amount of time in order to cover all options. From left to right: de-bugging/country code protection switch, expansion port, NTSC signal switch, RF port, S-VHS port, composite video port, audio (I and r) ports, power supply cable



3DO endured for the first few months after launch but accepts that it was the price 3DO had to pay for getting to the market first. 'Would it have been greater if we'd have waited until 1994 to

launch and had really eye-poppingly great software that would totally blow away every person you'd ever met? Yeah.'

The lead that 3DO has built up over the PlayStation and the Saturn by being out there first will, he believes, ensure that it wins the 32bit battle. Historically, 'first-in equals first place' was certainly true for Sega, which beat Nintendo to the market in Europe and America with the Mega Drive. but not so for Atari, which lost out to Commodore's Amiga in the 16bit computer market.

Naturally, he prefers to look forward to a brighter future of original product. 'We tell developers now, if you're doing ports, kill them. We don't need them. There are hundreds of original titles in development. However, Faber readily concedes that

certain big-name titles such as Myst do 3DO no harm.

3DO can take heart from another old adage that says it takes a couple of years for the development

community to really get to grips with a machine and start turning out great software (something PlayStation and Saturn owners may be facing up to as a steady stream of disappointing shovelware comes their way). There are currently 200 3DO titles in development worldwide and 75 titles planned for release in the UK this year alone.

That's a release schedule 3DO could have done with 18 months ago - especially as both Sony and Sega have a lot of titles in development - but it's proof that 3DO's much-maligned Market Development Fund - a \$3 levy on every title sold to cover advertising, promotion and manufacturers' profits - hasn't deterred potential developers. 'The reaction was initially pretty negative,' accepts Faber. 'I think what a lot of them did was take their foot off the gas for 30 days in the fall but once it became clear that it was good for their business they said, "Now, I understand." In light of Sony's recent announcement of a DM20 (\$14.50) royalty on each European CD release, which looks set to cut margins and drive up software retail prices, MDF looks positively attractive.

A fresh crop of 3DO titles is renewing interest in the machine as the honeymoon period of the Saturn and PlayStation comes to a close. Both Bladeforce and Killing Time

from Studio 3DO look outstanding, and thirdparty titles like Po'ed and Slam 'n' Jam are using the hardware well. 'This is the tip of the iceberg,' claims Faber, taking the chance to get in a sideswipe against the 3DO's rivals. And

'The establishment

of standards around

the world moves in a

glacial timeframe'

Faber is confident that 3DO's approach to educating developers is second to none. 'The systems put in place by 3DO were really good at getting developers up to speed,' he claims.

While some degree of mutual rubbishing is inevitable as the PlayStation, the Saturn and the 3DO gear up for battle on the shelves, it's true to say that 3DO has come in for more than its fair share of

> stick. Not that Faber is asking for sympathy; he accepts that it comes with the territory. 'One of the reasons why there are so many more negative comments made

about 3DO, even among developers, is because they won't make negative comments about other platforms, as they will get hurt. Very often they'll be put into a disadvantaged position as a result.'

Mud-slinging aside, Faber can't see 3DO losing out to Sony or Sega. 'They're going to come in, they're going to fight and we'll jockey for position and you know what's going to happen at the end of the day? All the competitors are going to be there.'

It's a typically open statement from a company that's genuinely trying to do things in a different way, a way that many in the videogames industry are still coming to terms with. 'What Sega and Nintendo have done has been, in the past, quite successful and it's an interesting model to look at,' says Bob Tate.

'From our point of view, to replicate that is not always the best thing, in that maybe in the future that isn't going to be the best way of approaching it. I think the market will decide which is the better in the long term."

There it is again: 'longterm', 3DO isn't going to go away - its major partners are all in it for the duration. Witness Matsushita's heavy backing of M2 and Goldstar's enthusiastic entry into the

global standard for interactive entertainment? Bob Faber is realistic but optimistic. 'Now we're a lot smarter about the way people react to that statement. When you think about the establishment of standards around the world, that's something that moves in a glacial timeframe. It really takes a long time but we think doing many of the right things to make it happen. We're getting the right partners, we're developing the right skillsets, we're driving down the costs and we're increasing distribution.'

The vision is still there. All it needs is for the reality to catch up.



M2's astonishing 3D performance is illustrated by this realtime demo, the first of a set of engineering demonstrations produced to convince potential developers

Studio 3DO titles Bladeforce

(above) and Killing Time (left) are

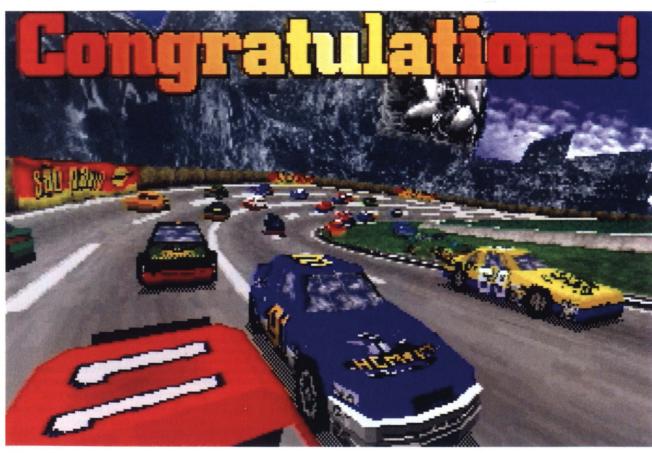
possibly the strongest examples

yet seen of 3DO's performance

European market. So, is 3DO $_{\mbox{\scriptsize destined to be the}}$

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Daytona USA



Daytona USA is not a killer app for the Saturn in the same way as Ridge Racer was for the PlayStation. Although congratulations are in order to Sega for retaining the essential gameplay, the lack of graphical finesse and dreadful music ensure that this will be a favourite rather than an all-time classic

Format: Sega Saturn

Publisher: Sega Developer: AM2

Price: ¥6800 (£48)

Release: Out now (Japan)

f it weren't for Ridge Racer, there's little doubt that Daytona USA would have been regarded as the ultimate next-generation videogame. Five months ago, its strong Japanese design, fast-paced action and cult arcade status would have clinched it for the Saturn. But unfortunately for Sega, Namco pipped it to the post, and Daytona now has a formidable adversary to contend with. Just as the Ridge Racer and Daytona coin-ops went head to head, so their respective home versions will inevitably be compared to each other. And it looks as if Sega could find itself forced into second place.

In an effort to keep up with its arch-rival, Sega has rightly concentrated on maintaining

a high level of graphical detail. But Daytona's visuals fall well short of Ridge Racer's. By any other standards, they're exemplary, but the low resolution, relative lack of colours and less-than-silky update ruins any chance of an overwhelming first impression. The game's rough-and-ready looks (the

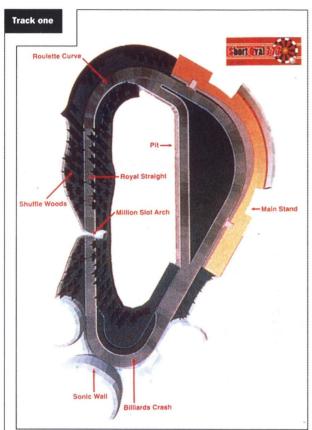
classic symptoms of a rush job rather than evidence of the Saturn's innate technical inferiority) would be acceptable if the track and scenery were drawn to the horizon, but the crucial graphical weakness of AM2's conversion is that it blocks in huge chunks of scenery disturbingly late. Although the vastly more powerful arcade machine suffers from the same drawback to a certain extent (due to



fan interest in Japan most anticipated Saturn game is AM2's ersion of its Playing with a joypac not a steering who missing is a graphical ality anything like

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Daytona's four views (clockwise from top left): high above for tactics: low above for balance; bonnet for damage control; bumper for speed









Track one is the most basic - the Billiards Crash corner is an ideal spot for learning to powerslide. A rolling start prevents wheelspin (left). 40 cars on a track means the racing gets pretty close at times (middle left). The pink car (above) is a reward for winning. Sonic Wall (right) is a tricky bend

lack of video memory in the first version of the Model 2 board), it happens much further into the distance, so the negative effect is kept to a minimum. Even though the home version runs in a 10%-reduced letterbox format, when you approach a corner you usually find that parts of the scenery are missing until the very last second, which makes it extremely difficult to think ahead.

Most people would agree that a thumping soundtrack and dramatic effects are essential components of a tense and realistic racing game. Although Saturn Daytona's sound is identical to the coin-op's, the karaoke-style wailing, repetitive samples and weedy collision effects become much more obtrusive and irritating outside the cacophonous atmosphere of an arcade. Considering that the Saturn theoretically has the finest sound chipset of any console, this is a major disappointment.

So far, then, it looks as if Ridge Racer has established an unassailable lead over Daytona. But that's without taking into account the most important criterion of all: gameplay. Devotees of the coin-op will be reassured to learn that the home version of Daytona has retained almost all of the features that made the original an arguably more substantial experience than Ridge Racer. Powerslides, collisions, manically swerving competitors and sophisticated artificial intelligence all help to compensate for any initial disappointment at the graphics.

Powerslides play an especially important role in adding a unique dimension to Daytona's gameplay. Initially, they seem uncontrollable, but with practice the correct braking/acceleration combinations prove rewarding (while still falling a little short of the coin-op's elusive handling characteristics).





In endurance racing, the timing of pit stops is crucial. Expect to lose around 20 seconds by the time your animated mechanics have finished work and you're up to speed again

testscreen



Entering Tyranno Tunnel flat out with a fort-like wall on one side and a vicious entrance on the other is an adrenaline-pumping experience. The tunnel itself is a slight disappointment

corners to be drawn. Granted, the cars are smaller and less smoothly shaded than *Ridge Racer*'s, but given the sheer number of them onscreen at any one time it's an impressive endorsement of the machine that the action maintains a decent pace. The update could be smoother, but the game still manages to create an effective sensation of speed.

The arcade's four views have been

retained, allowing you to adapt the game to your own racing style. Each has specific advantages and disadvantages, depending on whether you're more concerned with thrills or tactical control: the high and behind-the-car perspectives are best for an overview of the scene and allow you to dispense with the proximity radar, while the in-car camera speeds up the frame rate noticeably

The game comes equipped with a number of driving options which allow you to eek out every last moment of pleasure from the title. A 'Saturn' mode offers a range of new cars, while the 'Endurance' and 'Grand Prix' options provide a more realistic racing environment – pit stops now have to be included in your tactics. This aspect of the game goes hand in hand with another aid to realism: when your

The artificial intelligence of *Daytona*'s cars is greatly superior to *Ridge Racer*'s. Instead of getting in your way by accident rather than design, rival cars intelligently block your path with violent swerving manoeuvres. This gives the game added depth, especially as the cars also jostle for position among themselves – the spectacular crashes which often result are among the high points of the game. The excitement is enhanced by the fact that there are up to 40 cars on the track at once.

Surprisingly, despite the high number of vehicles there's little slowdown – the only occasions when performance takes a noticeable downturn are when there are complex





Probably the most impressive looking of all three tracks, Dinosaur Canyon features fortified buildings, hairpin bends and fossil cliffs. This tunnel (right) shows how the Saturn game compromises on detail – unlike in the coin-op, your car remains in shadow even when it passes the windows

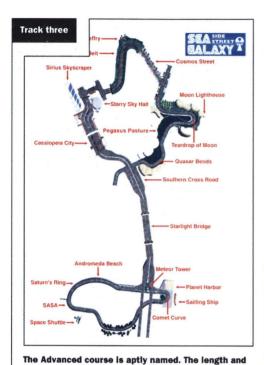


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car smashes into walls, melts rubber and drives on grass, it suffers a degradation in performance as well as superficial damage. Pit stops allow this damage to be repaired – a crucial factor in the endurance races.

scattered hazards make it by far the hardest to win at

As in the arcade, there are three different courses, each of which offers its own challenge – to stand any chance of making progress, you have to familiarise yourself thoroughly with each one. This gives *Daytona* a significant longevity advantage over *Ridge Racer*, which, despite its plethora of track options, essentially has only one course.

As well as the three tracks, *Daytona* contains plenty of secrets to keep you playing. Doled out both with key-press combinations and as rewards for coming first, they include mirror tracks and extra cars. And, while the standard end sequence can be accessed by finishing in the top three on any race, there's also an unusual bonus mode when you've completed all three courses...

Although AM2 has managed to replicate the coin-op tolerably well, Saturn *Daytona* fails to capture the arcade experience that PlayStation *Ridge Racer* so convincingly delivers. Although there's no single factor that cripples it, the game suffers from an accumulation of niggles which ensures that it never quite manages to fulfil its enormous potential. If you're expecting an arcade-perfect conversion, you'll be slightly disappointed, but if it's a fast, thrilling racing game you're after, *Daytona USA* has a great deal to recommend it.











This bridge is an impressive starting point (top left). These pillars are just waiting to be hit (top right). Another wheelspin (middle right). Careering through Cassiopela City (main)



Slowcoaches can expect some serious mayhem to ensue when the rest of the cars catch up

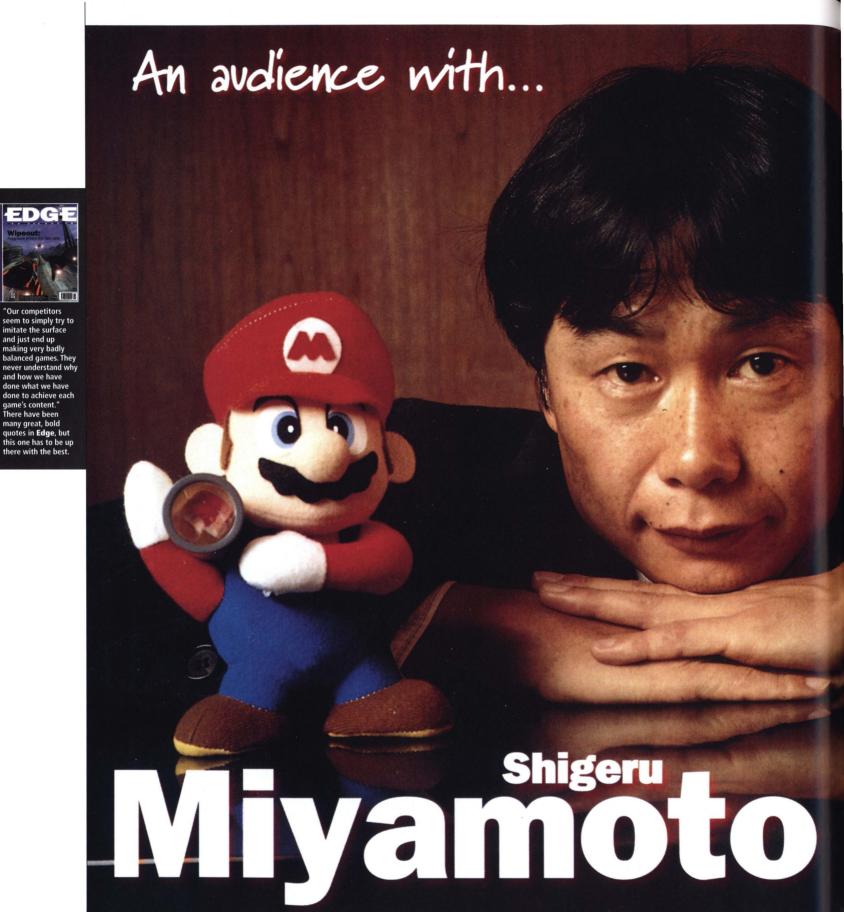




The mirrored sweep on track two (top) – racing like this is surprisingly easy. The extra cars above) offer little extra performance but the special winning mode makes it worth it

Edge rating:

Eight out of ten



interview





The creator of Mario gives **Edge** the benefit of his two decades' experience in the art of game design

e is arguably the best known and most admired games designer in the world. It has been said that he 'has the same talent for videogames as the Beatles had for popular music'. Of his own success he says, simply, 'I think it is nothing more than destiny.' He is Shigeru Miyamoto, the man without whom Nintendo may have remained the moderately successful videogame manufacturer it was when he joined it.

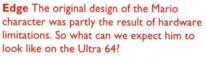
Born in 1953, Miyamoto demonstrated an appetite for creativity from an early age. During his formative years, his passion lay with puppet making, leisurely sketching of his surroundings, and cartoons – both Disney features and his own efforts, created with flip books.

interview

While still believing deep down that a career as a performer or artist beckoned, he began a degree in industrial design, taking five years to pass the course - he spent much of his time playing guitar or pursuing art interests rather than engaging in coursework. Certain that he could not bear the strict regimen of a typical Japanese firm, he joined the relatively unconventional Nintendo in 1977 as its first staff artist, even though the company had no need for one - such was president Hiroshi Yamauchi's belief in the young Miyamoto's potential.

18 years (and around 70 million

cartridge sales) later, the father of Mario is heading Nintendo's push into the next generation via Ultra 64 software project management. It is widely felt that if anyone can rebuild Nintendo's success in the face of intense competition from 3DO, Sega and Sony, it's this man. Edge joined him at Nintendo's Kyoto headquarters to discuss 3D games, Kansai humour and French serenades...



Shigeru Miyamoto I can't really say too much about it... Mario is very easy to draw using dots. Now, with polygons, it will be possible to draw his image with more precision. Mario will certainly have a more complex design - his moustache, hat and nose will be drawn more clearly.

Edge What do you think of the current vogue for 3D games?

SM When Space Invaders was written, nobody at that time was able to imagine what the actual technology was capable of, or where it would go - they would have been very surprised. Games became more and more complex, and the consequence was that lots of games appeared that were very different. And 3D gives games even more complexity, so essentially it's just about making games wider in scope. From a 2D game as a basis it's possible to make a 3D game by adding some new points made possible by 3D. Personally, I'm very interested in making some new 3D titles based on old 2D ones. The additional complexity offered by 3D gives more possibilities to creators and that in turn is good for players.



to semi-completed projects, as you did with Starwing and Donkey Kong Country?

SM If you ask me which is easier, I should answer semi-completed projects, as I can just add whatever new, exciting aspect I can think of without experiencing a birth pang. It's always fun to improve a game by supplementing other people's skills on half-completed projects (providing that the

> project is a good one). Making wonderful interactive entertainment from scratch always requires hardship, time, energy and a lot of other resources. However, you'll never improve your skills without feeling that birth pang. Edge What's the secret

of a good game?

SM Well, to make a game you must put in a lot of effort [laughs]. I'll put my neck out and say

that PlayStation games sound good, but when you watch them in action they're not finished at all in my opinion. A game is finished when a creator decides it is. There are lots of games developed for Nintendo that have to be refused release because they are not finished. When you are making a game the creator must not allow it to be released because he is satisfied he must always think about the player's feelings and wishes. Self-satisfaction is not conducive to creativity. I think that European painters - like the impressionist Cezanne, for example - were always thinking about how to surprise the customer - to impress them in a gallery. It is very important.



Edge When you design a game, what aspect do you work on first?

SM The game system. More precisely, I'm thinking about what a player would like to play. I try to make a game for the players' point of view and imagine what kind of character they would like to be. Then I move onto building up the game, adding a scenario, deciding on a setting, the characters and the events that will take place. So, I try to meet the customer's wishes first. I haven't had much experience in developing RPGs but it is very important for that type of game in particular.

Edge Do you prefer working on your own, creating original games from scratch, or are you happier adding the final touches

Edge Most of your games have a unique 'feel' - do you think this is your own personality stamp or simply a Japanese style of game design?

SM I believe that we are not making Japanese games, but Kyoto games, if you follow me. The sensibilities of a Kyoto game are different from those of a Tokyo game, although both are obviously Japanese cities. We Kyotoites hate to follow fashion but rather love to set the fashion. The thing we always keep in our mind is that we

should

even during very serious conversation. Edge What is your favourite kind of game? SM I don't actually play many games. I like to play around with them, but I don't really

spend much time doing it. If you want to play role-playing games you have to play for at least five hours to enjoy them and I don't go for that kind of

obligation. I like

always

make better games than ever so that gamesplayers

all over the world will praise us.

Edge Nintendo games often have an element of humour. Do you regard humour as an important component of your games?

SM I don't know if our games are humorous. If you think so, it's probably because of the nature of us Kansaiites. Kansaiis the region covering Osaka, Kyoto and several other cities. The Kansaiites make much of wit and explicit jokes, and are proud of making people laugh. Kansaiites feel like cracking a joke or two

things like Tetris, for example, which are enjoyable in a shorter period of time. Outside of my own productions. my favourite videogame is maybe Pac-Man. Edge How did your career at Nintendo develop – how did you get to the position you're in now?

> SM When I joined the company I was working in product planning. We had to choose new ideas to put into production and just about anything was under consideration: toys, new types of motors... It was then that I discovered videogames, and I

realised that was the kind of product I wanted to make. So I didn't join Nintendo with the intention of making videogames - I discovered that later on.

Edge What do you think about Sonic, Sega's reply to Mario?

SM I've never really played Sonic games much.



nice and I think Sega succeeded in making a good, strong character. There are lots of games that try to imitate Mario but Sega did especially well with Sonic. Despite his

resemblance to Mario, there are some special points that make him different: the energy, for example. Among Mario's imitations, Sonic is a good one.

Edge What about Earthworm lim, Shiny Entertainment's popular new character?

SM Unfortunately, I have not had the chance to play it much. But I liked his expression when he fired the gun. That kind of expression is one I was thinking about incorporating in my own game. It conveys the idea of shooting without actually showing the flying bullets, and could be exhilarating for the player.

Edge What common mistakes do you think are made by your competitors when they imitate your work?

SM Unfortunately, our competitors seem to simply try to imitate the surface and just end up making very badly balanced games. They never understand why and how we have done what we have done to achieve each game's content.

Edge Do Nintendo and Sega have the same approach to games?

SM I think Sega is trying to imitate Nintendo's way of business, but it makes some modifications. Perhaps Sega's particular strengths are its arcade business and its capacity to produce new hardware. Nintendo's strategy is different from Sega's - Nintendo gets involved in research and development and markets the results of its research. Sega proceeds in another way - it imitates Nintendo and tries to produce research and development on products that Nintendo is going to sell. It researches only the products that it knows it wants to sell. The results are the same for both



Shigery Miyamoto is based at Nintendo's world headquarters in Kyoto, Japan, At the moment, however, he's spending most of his time in the United States working on Ultra 64 software

interview

companies but Sega is always thinking in terms of the market.

Edge You're now working in America. What specifically are you doing there?

SM Right now I'm working with Paradigm Simulations. There are lots of companies involved in 3D and of course

Nintendo wants to use the new techniques being made available. My overseas job is linked specifically to product quality. As you know, the quality of products is very important to Nintendo, so I evaluate products to decide whether they're suitable for us. I'm always thinking in terms of the Nintendo brand, and ultimately I decide if the product is fit for production.

Edge How easy are you finding dealing with teams based overseas?

SM Communication with foreign teams is not always easy - our way of thinking is often different - but I have to decide whether each product is suitable for Nintendo. There are some enjoyable times but there are also some difficult ones. I think that I shouldn't force myself too much upon outside teams as it would be harmful to the products they're working on. So instead I play, and we discuss ideas together. I think a producer has to be removed enough so as not to influence the team too much - the less the producer gets involved, the better the product is. If I get involved too much, we start having trouble... [Laughs.]

Edge Did you take your NCL team with you to the US?

SM I'm working with NOA staff right now, as I went to the States on my own. This month things will change and I'll be in charge of a team of young NCL designers.

Edge Do Japanese and American production styles differ? And how do they compare with European developers?

SM I like the English way of working very much. I've worked a few times with English developers and everything was perfect. I'm a little worried about the American way of working, because in America I worked from more of a business position, whereas in England I

worked with development teams. I say that I like the English approach because they work the same way as me, I don't know exactly about America...

But like Japanese, American producers – movie producers, for example – need to be involved very deeply in their work; they put in a lot of effort and sometimes there's

nothing left for a private life. I'm sure that Americans work very efficiently, but sometimes when I work with them they are careless. I prefer working with English because their way is more Japanese.

Edge And the French?

SM Oh, I don't really know at all... I can imagine the French on a veranda listening to a serenade, but for games... [Laughs.] Seriously, they are doing some very good games. Infogrames' Alone In The Dark is the sort of game I would like to make.

Edge What is your actual role in the Ultra 64 project?

SM I'm responsible for the software. There are certain companies based outside Japan who have been working with Nintendo for a long time, and I'm in charge of the quality of their games, and I also provide ideas.

Edge Are you working on the sequel to *Pilotwings* with Paradigm?

SM I can't really talk about it. Generally speaking, though, we want to use the experience and technology that lies in









Miyamoto-san joined Nintendo in 1977 at the age of 24. His earliest sketches of Mario and Donkey Kong were the seeds of a videogame empire that would grow to epic proportions

Paradigm's field, like the flight simulation experience, for example...

Edge What do you think of the next-generation machines?

SM If we look at it simply, or from a pro-user point of view, these machines obviously have certain capabilities. If we look at it more deeply, 32bit and 64bit machines are the same - the programming and development is done in the same way. To master these new technologies will take three to five years. It's the same in the arcades - from the very beginning, three to five years were necessary in order for the newly discovered technology to be mastered. Of course, Nintendo has more than five years' experience in this area. This year, for instance, we don't have any programmers mastering next-generation technology. We think programmers will begin to master it from around spring next year to the same period the year after, and

interview









a difficult simulation game. The making of a series is the most difficult thing to do. I think the designer of Dragon Quest thinks the same way as me. Even a person who has never played Dragon Quest must be able to play Dragon Quest 3. The producer must think first about the player.

Edge Why are there so few titles available that use the Super FX?

SM The chips are obviously expensive but speed is the main problem. We have



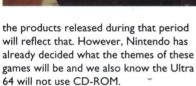


SM Are they waiting? Well, I think the Ultra 64 will be the cheapest hardware available in the next-generation market. And the Ultra 64 will be the most powerful new systems. I think it's down to software, really. If the system does not have five or six good games available at launch - and if I don't put in my contribution - consumers

will buy other hardware.

It's interesting, but I don't know if people really want to play on the Ultra 64, in the same way that I don't know whether existing 16bit hardware isn't sufficient for the player anyway. Sony and Sega are insisting that the market exists but historically Nintendo is the only company that has sold more than ten million units of hardware. The claim that Sony or Sega would be able to sell as much hardware as Nintendo sounds uncertain. With these ten million units we gained much experience and saying that another company will be able to talk on the same terms seems strange to me. The main problems for Sega and Sony are in actually identifying that the market exists, and in believing that they can reach the ten million mark. The mass media analysis also amuses me - they say that history always repeats itself, but it is simply too early to say whether it is yet right for a 16-bit owner to go out and buy a 64bit machine.





Edge So what do you think about CD-ROM?

SM I shouldn't talk about it... Okay, CD-ROM has a big capacity but is very slow. For interactive games, a media format this slow is not so good. People want games with large amounts of data, at a cheap price. For manufacturers of CD-ROM products it's also a good medium because it's not easy to copy. But while production cost in unit terms is very low, the cost of developing the data to fill a CD-ROM is increasing regularly. Thirdparties are not encouraged to make certain types of software on CD-ROM and can be reluctant to develop for it. You do not need high storage support in order to make good games.

Edge Your game styles seem mostly aimed at children, but the videogames market is changing - more and more games are being targeted at adult audiences. Are you going to change your approach?

SM It's difficult to say. First, I want to make games easy to play. I want to make different kinds if games, for adults as well as children. Mario was of course primarily



aimed at children but I think the understanding of a game is the same for a child, a specialist in videogames, an old person or even a person who has never played a videogame. A game must appeal to all these types of people, and that's ultimately the kind of game I want to do. Edge How do you set the difficulty level in a game?

SM As I said, everybody must be able to play it, from the total beginner to the game specialist. This rule is true even if you make

3DO M2 feature



With some developers expressing 'concern that (M2's) graphics are too real', you have to take seriously 3DO's next console hardware. This is, after all, a platform 'seven to ten times more powerful than the PlayStation' allied to the promise of "at least a dozen major hit titles finished in time for launch." Exciting times...



Just two years after the launch of its first licensed console, 3DO is gearing up for a second attempt to conquer the videogames world. With M2 development now at a crucial stage, **Edge** reports on the machine that could make or break 3DO

of and a family

3DO's second coming

n March 1993, Trip Hawkins embarked on a mission: to make 3DO a consumer electronics standard, as common as the VHS VCR and the

CD player. But two years later, while the PC becomes increasingly established as the de facto videogames standard, the 3DO still languishes in no man's land. Now Hawkins is trying again.

When M2, the second-generation 3DO machine, arrives in the shops later this year, it will be the most powerful set of silicon ever available to the home gamesplayer. With a PowerPC 602 chip supported by ten co-processors, 6Mb of memory, on-chip MPEGI and a 528Mb/second bandwidth, the machine is claimed by 3DO to be 50% faster than Sega's Model 2 arcade board, seven to ten times more powerful than the PlayStation, and significantly faster than the (now delayed) Ultra 64.

3DO's confidence in its system's abilities is apparently shared by its hardware manufacturers. 'All of our existing hardware partners are supporting the M2 project,' claims **Sharon Leah Grimshaw** of 3DO US. 3DO's association with some of the world's biggest electronics corporations – like Matsushita, Goldstar, Sanyo, IBM, Apple, Philips and Motorola – give it much more clout to push its technology into the home this time around. And 3DO is also talking to coin-op companies, which it maintains are all clamouring for exclusive arcade licences.

M2 is being primarily targeted at gamesplayers – lessons have been learned



3DO claims M2 can produce images like this in realtime (above). The Japanese HQ of Matsushita (right), manufacturer of the Panasonic FZ-1 and 3DO's largest backer

from 3DO M1, which was pushed as a multimedia player – and its success ultimately rests in the hands of the games developers recruited by 3DO.

If 3DO's performance claims are correct, the machine has definitely got the power to satisfy developers. 'One of the biggest frustrations for a game creator is watching a great game crushed by inadequate system performance,' says Mark Cerny, vice president of technology at Universal Interactive Studios. 'With the M2 that will no longer happen – we are

entering an era where the primary limitation will be our imaginations.

But 3DO is strictly limiting who gets to exploit this power. Only 12 developers — the much talked-about 'Dream Team' — will initially have access to the technology. A second group of developers — 'Team Alpha' — will then be offered a chance to work on the machine, with the remaining

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3DO M2 feature



companies who want a stake in M2 being able to start titles later this year.

One member of the Dream Team is Interplay. Executive vice president Dick Lehrberg describes the M2 in glowing terms: 'The M2 and its revolutionary design and groundbreaking features provide us with an excellent vehicle to deliver our software to consumers and meet our goals to stay on the leading edge of this fast-paced industry.

Many other developers have made similar statements - everyone who has seen the M2 emulation in action has been impressed with its performance. But, regardless of the power at their disposal, developers face a tough time if M2 is to have, as Greg Richardson of 3DO intends, 'at least a dozen major hit titles finished in time for launch - no Mahjongs, no Motor Toon GP and no Putt-Putts.

3DO's problem is that, unlike the Saturn and PlayStation - and like the original machine - it may have no 'killer app' at launch. Virtua Fighter and Ridge Racer had already been gameplay perfected in their arcades. In contrast, the members of M2's Dream Team have only six months to create games from scratch that can sell the machine. It's an ambitious task.

To ensure steady, longterm success from the start, developers will require a sizeable userbase. And the paramount factor in getting M2 into homes is price. 3DO MI started slowly due to its \$699 tag, and has found it difficult to shake off the 'failure' label ever since. The machine also had to contend with the fact that it was launching into a non-existent market. There were still many excellent l 6bit games available, and it found it hard to persuade gamers that a 32bit system offered anything significantly better. But, ultimately, price was the most fundamental consideration. 'One thing people don't appreciate is the importance of price to the mass market in this country, said Tom Kalinske in Edge 20. The US has always

been very, very price driven. It all comes down to price.

3DO maintains that the PowerPC technology offers an extremely competitive power to price ratio, arguing that because of its links with the multi-company PowerPC consortium, it can ride on the coattails of a larger overall investment. But when it comes to a specific price, it is keen to point out that 3DO itself does not set hardware prices. 'We deliver the lowest' cost possible to Matsushita, GoldStar and the other hardware partners, explains Grimshaw. 'They in turn manufacture and sell the 3DO units themselves.'

And this laissez-faire philosophy is the key to 3DO's plans. The PC has established itself in nearly 50 million homes around the world without any combined marketing effort from manufacturers, Individual hardware companies compete directly with each other to provide the best possible

3DO's problem is that, unlike the Saturn and PlayStation, it may have no 'killer app' - no Virtua Fighter or Ridge Racer - at launch

3DO M2 feature









The dinosaur head has been filtered - a technique similar to anti-aliasing which softens hard edges on an object. M2's alpha channel will be extensively used by programmers wishing to experiment with new effects. In this Virtua Fighter-style arena, a fog effect makes the players appear less distinct as the view zooms out and clearer as the camera closes in. velociraptor takes on a human fighter in an impressive display of polygon shifting. Most of M2's 3D games are likely to feature Gouraud shading. MIP mapping and filtering can enhance picture quality dramatically, as shown by these before and after views: in the top picture the fence is ugly and pixellated, while in the bottom, effect-laden shot it's smooth and realistic - the result of the M2 hardware being pushed to the limit

deal for the customer, relying on bulk sales to compensate for profit margins that are often less than 5%. Trip Hawkins' business plan calls for Panasonic, Lucky Goldstar, Samsung, Sanyo, Grundig and any other licensee to fight each other for sales. The hoped-for result: low prices, stylish design and happy customers willing to buy the hardware and spend on software.

'I think it's safe to say that companies like Matsushita and GoldStar have learned that to earn market you don't launch at \$700 or even \$500,' says Grimshaw. 'They now understand that to make the market, to be successful and to beat Sony – who they are after at this point – they are going to have to come out at a price that is competitive. Where do we think that is today? Well, let's just say we doubled our installed base, in one quarter, at \$399.'

So \$400 is 3DO's magic number. But with the PlayStation launching at \$300 in the US and Nintendo sticking to a 'below \$250' projection for its Ultra 64, M2 could well find itself priced out of the market – just like the original 3DO.

Certainly, SCE's **Steve Race** isn't admitting to losing any sleep over M2:

'Even if you suspend disbelief in a lot of areas, Trip has probably sold less than 500,000 units – in over a year. That's not a resounding success'

Steve Race, Sony Computer Entertainment

'Remember that we're talking about specs, and anyone can write down specs on a piece of paper. What's the price going to be? How's it going to be distributed? You also have to look at the bigger 3DO picture. Even if you're going to suspend disbelief in a lot of areas, worldwide Trip has probably sold less than 500,000 units – in well over a year. That's not a resounding success. He probably has installed in the US somewhere between 80,000 and 150,000 pieces. That's not a lot of units and I think that as far as retailers are concerned, when you start to smell like three-day-old fish, you are three-day-old fish.'

As well as price, another question that will determine M2's success is compatibility. The machine will slot into the

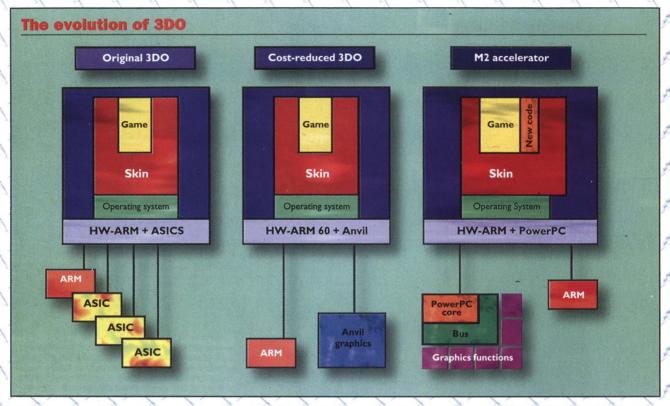
compatibility. The machine will slot into the AV expansion port at the side of all current 3DOs, but precisely how important the

original components will be is not yet clear. M2's OS contains many of the same calls as the original, and the CD-ROM drive will be reused, as will some data paths, but the vastly superior technology of M2 renders much of the initial hardware obsolete. M2 uses a different memory sub-system to 3DO M1 (SDRAM instead of DRAM and VRAM) and the 64bit architecture and wide bandwidth mean that, effectively, an entirely new machine is being added. It is certainly more than just adding a few extra, faster chips to the existing box.

Although system upgradeability is generally regarded as a good thing by developers (where would the PC be without it?), the customer's view on the subject is rather more hazy. The thought of having to re-invest so soon will surely not be relished by current 3DO owners, and they will take some convincing that upgrading is worth their while.

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3DO M2 feature



The 3DO has undergone several improvements already, but the arrival of M2 will radically change the machine's architecture. The addition of the PowerPC 602 chip, a greatly widened bus and a total of ten co-processors will make for a substantially different piece of hardware

Attempts by developers to reassure consumers have already begun. 'All our existing 3DO titles will run directly on M2,' argued one M2 convert. 'More recent titles will detect the presence of M2 and will use the additional features.'

Be that as it may, 3DO is taking a risk. It is expecting gamers to fork out an extra \$200-400 to keep it at the cutting edge, a considerable expense when you consider that – by the firm's own admission – more than half of 3DOs will be less than 12 months old when M2 arrives.

One ostensibly trivial but ultimately crucial aspect of the new machine is the redesign of the joypad. The original pad came in for a lot of criticism from gamers and developers alike. 'Not exactly a work of art, is it?' admitted 3DO's **Greg Reynolds**. 'Unfortunately, it was Panasonic's first foray into videogames. They are working to ensure that the M2 controller has none of the original's problems.' Certainly, a comfortable

SNES-like pad would be a major point in M2's favour.

The 3DO Company has completed the first stage of its three-phase run-up to the launch of M2. It recently received the finished custom chips for testing, and they're all running according to plan. Once the company is satisfied that the operating system works with the hardware, the first development stations will be shipped.

Next, sometime during the summer, 3DO plans to announce final configurations, confirmed hardware and software partners, and launch titles. The final phase will focus more on marketing than software development, and will include launch details, distribution, and, crucially, M2's street price. M2 will then hit the shops in December this year.

3DO is expecting gamers to fork out an extra \$200-400, even though more than half of 3DOs will be less than 12 months old when M2 arrives



The M2 development system with its guts exposed. First games arrive in six months

'The bottom line for 3DO is that we do not believe that a closed system will ever win,' states Greg Reynolds. 'If this market ever wants to grow beyond a toy industry then the necessity for a standard is paramount.' 3DO evidently believes that its new system will succeed where 3DO MI failed. Whether Trip Hawkins' vision of a global videogames standard is to be realised won't become clear for some time yet, but 3DO is certainly going all out to make it happen.



M2 tech specs

Highlights

1 million polygons per second 100 million pixels per second 10 custom co-processors 528Mb/second bus bandwidth

CPU

Custom PowerPC 602 RISC chip @ 66MHz

32K instruction and data caches
132MFLOPS per second floating-point
maths processor

Memory

48Mbits (6Mb) of SDRAM and ROM 64bit memory sub-system bus to facilitate rapid movement of data Cache-coherent memory system Game saving; internal non-volatile memory plus storage cards

Graphics

Resolution: 640x480 in 16bit; 320x200 in 24bit Full-motion video capabilities MPEG 1 video built in as standard MPEG video supports JPEG decompression

Custom graphics

Texture mapping: destination-based rendering

Hardware texture decompression Linear, bi-linear, tri-linear and pointsampled filtering

MIP mapping - multiple detail levels Gouraud shading on RGB and alpha channels

3D perspective correction-Hardware z-buffering Alpha channel special effects (eg fog and transparency)

Sound

66MHz DSP 32 channels with hardware decompression and interpolation on all channels

MPEG audio decompression 44.1KHz (CD-quality) sound



Voges



A 3DO console boasting 150 games compared to PlayStation's slim launch tally will sway consumers. Sony doesn't have a longterm plan. **Edge** and its readers haven't supported 3DO enough. Seven thousand copies of 3DO *FIFA* sold in France! 3DO Europe's marketing chief comes out fighting...



John Edelson

3DO's prognosis has improved somewhat recently, thanks to news of M2 and increased hardware support from the likes of Sanyo and Goldstar. As the company prepares to face Sega and Sony head-on, **Edge** asks one of its top execs what the future holds

ohn Edelson has arrived in England as sales and marketing director of 3DO Europe, but, given his somewhat peripatetic route, he might easily be

here in a completely different role. After graduating from college, he spent two years in the Peace Corps in Cameroon, West Africa. He returned to attend Harvard Business School and then set out again, this time to Paris to become a strategy consultant for French multinationals. After a while, like most people, he decided that he didn't want to work with the French and didn't want to be a consultant. So he quit and went to Silicon Valley in search of the California dream.

As a child, John lived in London for three years. He'd never have guessed he would return to direct the fortunes of 3DO. **Edge** spoke to him at 3DO's new office in sun-kissed Richmond, nestling on the banks of the Thames.

Edge How did you get into the videogames business?

John Edelson I was calling up friends

looking for a job and I stumbled across a company which I'd never heard of, and none of my friends had heard of, called Silicon Graphics. This is in 1989. They were looking for a product manager in the software division. After about ten minutes of the interview the guy turns to me and says: 'So you don't really know what a compiler is. And you don't know anything about UNIX Protocol Sac for communications.' I'm a fast learner,' I said. The next day they phoned me up and offered me a job.

Edge What was Silicon Graphics working on at the time?

JE There was a dream there that some day they would have realtime graphics. Initially that was done as remote graphics terminals. Then it was done with workstations. It was their goal to bring in a machine at under 20,000 dollars. Their first project delivered an 80,000-dollar computer to the market and almost took the company out of business. Then they brought out the personal Iris. Then it was the Indigo and that I played a key role in. This was going to be a realistic tool for a lot of people. I was in charge of getting

software. The biggest deal I did was with Autodesk to get Autocad. We also worked

Edge Was SGI even thinking about games at this time?

We changed

the industry. All

the current

competition is

between people

who have done

3DO lookalike

products... 3DO

is the revolution

JE At the end of the Indigo project in 1992 I was trying to get them interested in the multimedia realtime business. If you go to the CES, to the Nintendo tent, there's this big realtime Mario that talks to you. It's pretty damn cool. Nintendo's involvement was really driven by an engineering firm in Los Angeles called Sim Graphics, but they needed one more computer and that was

the Onyx. That was one of my deals. It was a big hit except at SGI, where no-one seemed to give a damn.

Edge Why did you leave SGI?

IE In the summer of 1992 some of the multimedia engineers had left Silicon

Graphics and gone to a little startup called SMSG [San Mateo Software Group]. Next thing I knew, I'd been recruited to get software. And that's how I ended up at SMSG, which was the codename for 3DO

before it was born.

Edge What's the difference between working at SGI and at 3DO?

JE It's pretty much the same. Hi-tech company, people really excited about being there, coming in a little too early in the morning, staying far too late at night. Passionate about the work. Absurdly ambitious. Both have longterm visions. Some times we'll be in style, sometimes not but in either case it's a damn

exciting place to be. Neither one is heavily corporate. I left SGI because it just got so

Edge Ironic then that, in effect, your goal is to make 3DO so big that you'll have to leave it too...

JE Life is full of little ironies, isn't it? No, the beauty of 3DO is that because so much of our business is done through thirdparties and licensing, we can stay smaller. We never need a factory or a warehouse. Most of the mundane functions we can avoid, particularly over here where there's just so few of us. It's back to being very entrepreneurial.

interview

Edge At the time of SMSG, the 3DO was a unique product. It must have been especially exciting then.

IE It was. By the time 3DO hit the street we already had 100 developers signed up, which entirely changed people's perceptions of the rollout. As usual, the software was late and the marketing wasn't quite together, but we changed the industry. All the current competition is between other people who have done 3DO lookalike products.

Edge They may look the same but some of your competitors have significantly more advanced hardware. You hit the beach first, but do you now feel like a casualty of war? JE 3DO was formed to create a standard and reform the industry. Until a year ago, Tom Kalinske from Sega was still saying, 'A



interview

system like 3DO? We'll never do it. There's no market for it.' We proved that there was. 3DO is the breakthrough. 3DO is the revolution.

Edge But as the Saturn and Playstation step into the spotlight, don't you feel a martyr to the cause?

JE They have a certain appeal right now and we've seen this in Japan. At the end of the day it's who's got the most momentum, who's been most profitable. 3DO has a lot of advantages which will carry the day. Edge Which are?

JE Of the three systems, 3DO costs the least to manufacture. In Japan, Sony have made a big deal out of the fact that their machine is cheaper at retail. We have a higher suggested retail price but a lower street price.

Edge What about the USA and Europe?

IE I don't know. Sony and Sega both made a big deal out of the fact that their machines were cheaper to manufacture because they used off-the-shelf components. It's true that this means an easier rollout and a lower startup cost. But unlike us, Sony and Sega have to call up their vendors and say, 'Hello, Mr Vendor, we would like to involve you in a programme to build volume and reduce cost.' The guy says, 'Ah, you'd like me to be involved in your cost-reduction programme because you've designed a system around my chips? Gotcha!' Edge Maybe they'll be willing to swallow that cost as long as they sell enough units?

JE Which is the bigger company, Matsushita or Sony? Matsushita. I wonder if they're really on top of the fact that they're in for a war. I would guess that they've sold their management on the fact that this will be a quick hit and the war's over. Many people have predicted that Sony will be out in 36 months. I don't think they have a longterm plan. I think the whole thing's based on a big rollout. It's a war and this fall we'll do fine. We have a large and loyal cadre of customers who are eager to evangelise it to their friends.

Edge Is there not some disappointment as well? Without Crystal Dynamics there would have been a definite dearth of 3DO-specific software.

JE None of the ten top-selling titles in Europe for 3DO have come from Crystal. Edge Maybe people just don't like their products much. But leaving Crystal aside, there's still a lack of new titles.

JE This is an ancient beast. Everybody always wants more. The real question is this fall. There's some number of people who are willing to go to the shops and buy advanced systems. What are they going to

buy? They'll find a 3DO with maybe 150 titles. Three advanced systems may be too many. Sony's a little bit stronger over here, but how many titles will they have? Software tends to be late. It's hard to get the PAL stuff done. I don't know. And by then M2 will be flashing around, although it doesn't really ship in volume till next year. Plus, the fact that there are people doing third- and fourth-generation titles on 3DO that make the system look better than stuff you'll see elsewhere. There are developers that will tell you there's

stuff they can do on 3DO which they can't on other systems. Edge With regard to M2, it must be difficult enough, with all these systems jostling for ascendancy, to gain the allegiance of thirdparty developers for MI, let alone for

MI, let alone for yet another product.

IE I've talked to developers for a trillion years now, and the fact is they never have enough time to do a dog, but they've always got the energy for something they think is a good investment. Our indication with M2 is that they are queuing up willing to compete and invest in getting a hold of

development systems.

Edge With 3DO's well-documented problems in the US, how important is the UK and Europe for sales and development?

JE In the US things are going unbelievably well right now. At Christmas we went shooting through 200,000 systems. Things are going great here in the UK. We're in Virgin, HMV, Future Zone. They're making

a lot of money out of us. In France the grey market is very strong. If you're into Micromania or FNAC their version of Dixons you'll find 3DO stocked. EA sold 7,000 FIFAs into France. Not bad as a running start. And Goldstar launches there in June. Panasonic will be rolling out in Germany soon, which is the biggest European market. I'd like to see Edge and its readers have a little more enthusiasm for the revolution that's going on.

Edge Why do you believe the

magazine isn't enthusiastic?

JE Because it's reported on like a horse race. The bulk of the reporting is who's out in front, when the exciting thing is really how much better the games are.

Edge Talking of games, what about a Studio

3DO here in Europe? Do you have any plans?

JE If Trip's gonna read this I'd better not say yes, because he doesn't know about it. But yeah, we got plans here in England. There's so much talent in England that it can't be ignored. In fact, we're already working with Krysalis.

Graphics man, you must be more than a little interested in the Ultra 64 collaboration.

JE First of all, the irony there is that those of us at Silicon Graphics who were really interested in the games industry never had any success at the company. Both the Sony deal and the Ultra 64 deal came from a bunch of chip nerds in the MIPS project who went and sold silicon technology to







them. Not existing silicon technology but the ability to design new chips. Ultra 64 is aiming at a different market and using a dramatically different technology to us. It's a cartridge system. How will it do? In terms of its price it's got to be a winner. It's got no CD drive. That's the most expensive part of a system. I don't know if it's a winner in terms of being a decent opportunity for publishers. Cartridges are damned expensive. So, is there any margin for the publisher? I don't think so. People who need CDs are not the people who buy games but the

publishers. I don't know any publishers who are interested in Ultra 64.

Edge You say
Nintendo is aiming for a different market – a games market – but although 3DO originally positioned itself as a multimedia machine we've seen nothing but games so far.

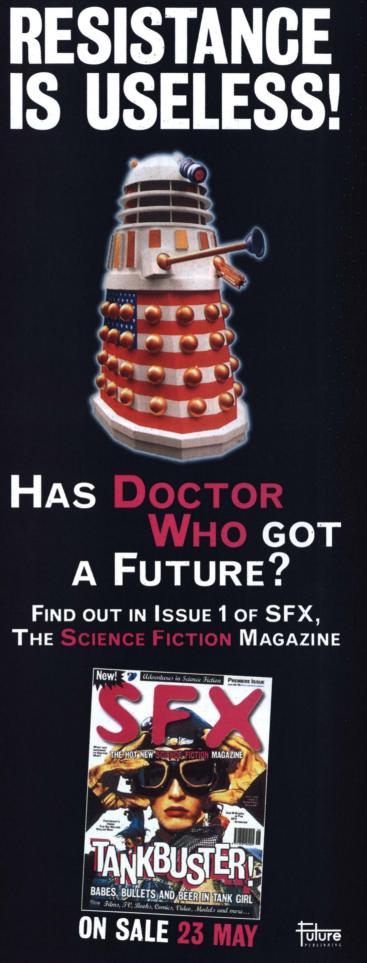
JE It's a question we keep asking and testing the waters on. The early-adopter market is

pretty games focused. In fact, they'd like it to be games only because it feels cool in a way a broader machine doesn't. Does this change as you get out into a mass market? In the United States we have some evidence that this is the case. We are selling more multimedia stuff now – not just in an absolute sense but in a relative sense – than at the beginning.

Edge What's the most important task for 3DO now?

JE To continue to deliver innovation and quality to the customers, and to stay one step ahead of the other players. So far so good.

Sony will be out in 36 months. I don't think they have a longterm plan. I think the whole thing's based on a big rollout. It's a war and this fall we'll do fine



E3 in Los Angeles. And the expo's debut

squaring up, 3DO revealing M2 prototypes, and Atari throwing its weight behind yesterday's big thing, virtual reality,

Nintendo, meanwhile isn't yet ready to E3: Sega surprises with Saturn launch/page 6 • Sony's strong showing/page 8 • 3DO's new machines revealed/page 8 • ultra quiet at Nintendo/page 10 • Jaguar CD & VR/page 10 • Escom: the future of Commodore and the Amiga/page 12 • Tokyo Toy Show report/page 14



The latest **news** from the world of interactive entertainment

E³: Saturn sneaks out, The games industry's most anticipated event 32bit dominates



debuts with a bang

os Angeles, Wednesday 10 May. 9am: staff at Toys 'R' Us, Babbages, Electronics Boutique and Software Etc stores across the USA secretly start stacking Sega Saturn boxes on their shelves. Pre-empting its own announced September 2 launch date, Sega is firing the first shot in the US next-generation videogame war. 5.30pm: Steve Race, Sony Computer Entertainment's president, 'officially' unveils the PlayStation to the US press. He announces a release date of September 9, and tomorrow will confirm that the machine will cost \$299. At 7.30pm, just two hours later, in a hotel less than half a mile from Sony's press conference, Trip Hawkins

shows off M2 to a conference hall crammed with gaming journalists, developers and software publishers. At the same time, Nintendo throws a cocktail party for over 3000 people.

And all this is before the Electronic Entertainment Exposition (E³) has even officially opened. It was the largest videogame

show ever and every major player met to cement deals, scout out the



The Los Angeles Convention Center in downtown Los Angeles was a spectacular success. Now, if only it wasn't held in downtown LA...

The Convention Center's airy interior played host to the latest in videogames competition and just show off. For observers, E³ provided a unique insight into what shape videogames will take in the rest of 1995.

There were some great new games showcased. Among the best were Delphine's Crossfire, Amazing Studio's Heart Of Darkness, Psygnosis' Wipeout and Destruction Derby, Nintendo's Killer Instinct, Single Trac's Twisted Metal and Sega's VectorMan. Some surprising announcements were also made, the most significant being Nintendo's withdrawal of Ultra 64 from the 1995 schedules and Sega's

EDGE

magazine August

1995



Sega's mammoth stand featured, amongst other things, its range of available Saturn games and a selection of its superb coin-ops (right)



The Saturn stand had a strangely muted atmosphere. But the biggest surprise was how few new games were actually on display for Sega's CD console



→ revelation that Saturn's release date was being brought forward.

The best kept secret of E³ became common knowledge on the morning of Thursday 11 May. **Tom Kalinske**, president and CEO of Sega Of America, gleefully announced to an astounded conference that the 'Saturnday' September 2 launch was a decoy, and that: 'We [Sega] started our roll-out yesterday; we're at 1800 stores around the US and Canada today.'

Sony had learned of its rival's move a few hours before its own 'official unveiling' of the PlayStation (Steve

Race made no comment on Sega's launch but said that he was 'ecstatic' about the delay of Ultra 64). At \$449 with Virtua Fighter bundled and \$399 for a standalone Saturn, the retail price was as expected. Edge discovered that the retail chains carrying the Saturn are making no profit on the hardware (buying them from Sega direct at \$399), and are instead aiming to make a profit on the five games available at launch. While this news makes a price drop unlikely in the near future, it could be that Sega will attempt to counter the PlayStation's \$299 September launch by bundling more than one title.

Disappointingly, Sega had little new Saturn software on display apart from existing Japanese titles. Instead, it relied on a four-player Sega Rally link-up and the early Saturn launch to make an impression. The 32X, desperate for a life-giving injection of decent software, was left to its fate, while the only Mega Drive title of note was an Earthworm Jim-inspired platformer called VectorMan.

Whether Sega's surprise Saturn launch is the move of a company

Who is it?

This husband-and-wife team set up one of the first and most successful computer games companies, and revolutionised the adventure game, creating a whole new genre in the process



Making a surprise appearance at Sony's ultra-extravangant E' party was a star in need of publicity. Edge was lucky and didn't spend ages trying to get this picture (honest)



Sony's PlayStation stand had more games of interest than any other. Coin-op conversions such as *Darkstalkers* (right) were outnumbered by original titles like Factor 5's excellent *Ballblazer X* (above right)





it is...

Ken and Roberta

Williams. He heads

the innovative and

twee, King's Quest

as the most un-twee

Phantasmagoria

Sierra and she created

popular, not to mention

adventure series - as well



ahead of the game or frightened into a hasty attempt to gain a head start remains to be seen.

E³ was Sony Computer Entertainment's first US trade show. and the company spent a rumoured \$4 million on ensuring that its booth (if such a megalith could be called a booth) sent a strong enough message to its competitors. PlayStation demonstration set-ups dominated the floor of Sony's domain, offering handson tasters of upcoming PlayStation titles, including Wipeout (see page 28) and Mortal Kombat 3 (see page 26).

Its ironic that Sony, which was the company most expected to rely on corporate hype to mask concrete plans and smoke and mirrors to disguise a lack of software, was perhaps the most upfront of the 'big three'. While Nintendo endeavoured to insist that the conspicuous absence of Ultra 64 didn't detract from its show line-up and Sega rode the wave of E3's hottest news,



3DO's X-O-Tron VR contraption costs a mere \$22,000 for the basic setup. It certainly is a 'unique form of exercise and entertainment'

SCE quietly got on with the business of rolling out its plans and showing off its games. However, it couldn't resist arranging for Michael Jackson to show up at the movie studio venue of the \$2 million PlayStation party

Namco expressed disappointment, and not just a little surprise, at SCE's decision to sell the PlayStation without a bundled game. Steve Race failed to dodge an awkward question concerning Sam Tramiel's interpretation of Sony and the ITC's pricing laws at Sony's press reception. Namco could take consolation from Tekken's critical success; Sony Imagesoft displayed some encouraging games, especially ESPN Extreme, Single Trac's Twisted Metal and WarHawk; and Psygnosis wowed everyone with Wipeout and Destruction Derby.

The PlayStation's - and SCE's impressive show of form continues.



With no news of a significant price cut of the basic 3DO unit - other than Goldstar's token \$50 rebate on a →



3DO's stand was bustling with activity from the company's hardware licensees. Outstanding software was thin on the ground, though

An action-packed Bladeforce was one of the few 3DO games worth checking out

ipeout is Psygnosis' launch title for the PlayStation. It currently looks like a sophisticated cross between the 3DO's Crash 'n Burn and Nintendo's F-Zero. If it can capture the structure of one and the playibility of the other, PlayStation early adopters will be in for a treat.



Opening scene: the viewer is transported into the control room, deep beneath the track. Droids glide around busying themselves with last-minute pre-race preparations



Cut to close-up. Sled schematics flash across a monitor screen and analytical data reflect off the droid's steely skin. On the lower panel, an outside camera relays its observations



Cut to exterior: an impressive aerial flyby sets the scene. The course wends its way through mountainous terrain, with futuristic constructions dominating the foreground



The FZ10's proposed M2 upgrade was present in solid plastic prototype form

\$399 purchase - Trip Hawkins and The → 3DO Company diverted public attention to M2. As revealed in Edge 22, M2 is a 64bit RISC upgrade based on the 602 PowerPC chip, reportedly capable of generating 700,000 texture-mapped polygons per second. It's planned to appear in two formats: an add-on box for existing 3DO owners and a standalone machine.

But with no announcement - or even guesstimates - about either a price or a release date for M2, 3D0's promises for the future have to be seen as little but a spoiling tactic to place a drag on PlayStation and Saturn sales. Ironically, 3DO is now making



No realtime demos were viewable but the final M2 chips were there (above, right)

the same 'Just wait until next year' noises that it criticised Sega and Sony for less than 12 months ago.

In the absence of any real news, new 3DO peripherals commanded a disproportionate amount of attention. With prices starting at \$22,000 (!), the X-O-TRON VR is probably beyond the means of most gamers, but it offers a unique form of 'exercise and entertainment' for health clubs or amusement parks. Three gyroscopestyle hoops independently rotate a



news







Protoype models of 3DO's dedicated M2 players were shown during its M2 presentations. Panasonic's two systems were wildly different (far left, middle), while the rotund Goldstar model (above) paid compliments to the PlayStation



Close-up: starting grid. The sleds rise up through the track floor on their customised mountings. The soundtrack is punctuated by an incessant jabber of radio cross-talk



Extreme close-up as the red sled fires its rockets. The screen shakes as power surges through the frame. The flame quickly brightens to white hot as it reaches operating temperature



Cut to out-of-sled shot: the Wipeout track disappears into the distance. The engine whine has now changed to a barely suppressed rumble, drowning all other trackside noise



Close-up: green light!
Exterior: ignition, followed
by motion blur as the onboard
camera tracks a rival further on. The first corner approaches at breakneck pace. Game on...





Atari was keen to show off a prototype Jag VR system but less keen to tell people that it was actually Virtuality's £10,000+ arcade set-up



Father and son team Jack and Sam Tramiel, taking Atari into the future with Jag VR

assured everyone that the Jaguar

player suspended inside the contraption, which is hooked up to a 3DO game complete with stereoscopic headset. Those games of *Burning Soldier* will be so much better now...

Other peripherals included a three-button mouse from Panasonic, a new FZ-10 controller, TDK's Storage Expander which allows up to eight games to be saved on one memory card, the GameGun lightgun from American Laser Games, and an infrared remote-controlled joypad. The new 3DO Control Pad 2 will be bundled with Zhadnost: The People's Party and a \$199 MPEG Module has arrived from Goldstar, bundled with Total Recall.

As for new software, EA showed a very early version of *NHL Hockey '96*, and *Bladeforce* looked good, but other games, including *Battlesport* and *Gex*, were disappointing.

While Atari announced a US price cut to \$159.99 and

CD-ROM player may actually reach the stores very soon, it was the Jaguar virtual reality demonstrations that attracted most E³ delegates.

The Jaguar VR system, being

The Jaguar VR system, being developed in conjunction with Virtuality, is intended for release this autumn. Many informed observers of the VR scene doubted that Atari would be able to produce a VR set-up – in the true sense of the concept – for its intended \$300 price tag. And there was no evidence at E³ that Atari was any closer to achieving this goal.

Although the steady flow of delegates who tried an 'early working demonstration' came away exceedingly impressed, **Edge** learned that the system being demonstrated was nothing other than Virtuality's own \$10,000+ arcade system not so cunningly disguised as the Jaguar VR unit. A wolf in sheep's clothing indeed,

and reminiscent of 3DO's early attempts to fool CES punters into believing that a Macintosh Quadra demo was in fact the real REAL 3DO Multiplayer.

On the software side, Fight For Life looks much improved, but the

lack of thirdparty support continues to leave doubt about Jaguar's credibility. Although Atari is confident that there will be approaching 100 Jaguar titles before the end of 1995, the quality of these games is still open to question. Perhaps Atari is focused too narrowly on doing the math and not on doing the quality. But still, Jeff Minter's Defender 2000 is a game worth waiting for...

The Silicon Graphics team, house guests at Nintendo's sprawling →

Nintendo no go

Nintendo has announced that it is not going to attend next year's Winter CES in Las vegas. The decision not only puts the show's survival in doubt, but also places Nintendo's longterm plans under an already intense spotlight. By withdrawing from the show, Nintendo hopes to establish E³ as the single dominant show in the industry's calendar.

Of more immediate significance is what the move says about Nintendo's plans for the Ultra 64. Although it is rumoured that NIntendo is targeting Japan for a pre-Christmas release, it is unlikely that the company would press ahead with a second-/third-quarter US and European roll-out. With the Virtual Boy heading for stores soon and three huge SNES games well into development, it's not inconcevible that the Ultra 64 may not see these shores until autumn '96.



There was no sign of the Super Mario World sequel, Yoshi's Island – NOA chose to delay it in favour of DKC2 and Killer Instinct (inset)

EDGE

magazine August

1995

Data

Average household income of US Web user: \$59,600 Proposed speed of NTT's next Fiber/ATM network: 10Gb/s Percentage of households with cable in Japan: 3-5 Percentage of households with cable in US: 60 Current number of wireless telephones worldwide: 25 million Number expected by 2000: 180 million Number of telephones for every 100 Americans: 99 Number of times US fibre-optic cabling would stretch around world: 102 Number of nodes on Usenet: 37,000 Range of cordless TrackMan Live mouse: 30 feet Top-selling PC CD-ROM: **BBC Gardeners World** 3D Designer Average cross-format sales increase caused by half term: 35 per cent Retail price of Jaguar with no game in most shops: £99 Retail price of SNES with Super Mario All Stars: £79 Number of people in China who've had a vasectomy: 23 million Number of people electrocuted by live wires in UK homes during 1993 according to DTI: 2 Number of people wounded by pieces of cheeese in 1993: 40 And by pyjamas: 31 And by falling off the toilet: 398 Number of Saturns shipped in the US: 60,000 Number of Saturns broken by the Edge team to date: 2 Number of PlayStations broken by the Edge team to date: 1 Number of years Shigeru Miyamoto has been working on Super

Mario World sequel

Yoshi's Island: 4



A replica Batmobile dominated Acclaim's E3 stand but the accompanying batgirls proved more popular than Batman Forever and Probe's Alien Trilogy (above right)

→ show booths since the announcement of the SGI/Nintendo 'Project Reality' collaboration in 1993, were the people most obviously disappointed at Ultra 64's delay. SGI's engineers were keen to show off their creation to their competitors, but once again Nintendo kept Ultra 64 behind locked doors and away from the public eye.

The official line? 'We've decided to give our software developers additional time to maximise the power of this system in their game creation,' says Nintendo Of America chairman Howard Lincoln. The real reason? No-one's entirely sure. Software delays could well account for the lag, but with Killer Instinct and Cruis'n USA presumably having been completed months ago, and a host of promising thirdparty titles in the pipeline, a 1995 launch should at least be possible - if not ideal. And Nintendo should be wary of giving the competition too much of a head start.

Incidentally, Hiroshi Yamauchi, president of NCL, apparently hinted prior to the show that the Ultra Famicom (the Japanese U64) may well launch in December this year in Japan.

What was revealed at the show was a picture of the finished unit, with four joypad ports and a memory expansion port. Nintendo promises a revolutionary game controller, observing that the SNES joypad is intended to move characters around a 2D environment and that Ultra 64 is designed specifically as a 3D world generator.

Rare Ltd - recently on the business end of a 'multimillion dollar' deal in which Nintendo acquired 25 per cent of the company - was showing the two outstanding SNES games of the show - Donkey Kong Country 2 and Killer

Instinct, Otherwise, there were very few big SNES titles at E3, and the crudelooking Earthbound (aka Mother 2) from Nintendo was a bizarre inclusion.

The most recent addition to the list of official U64 game developers is Mindscape, which is working on Monster Dunk - a basketball game featuring Dracula and King Kong. In fact, for U64 it seems to be business



What is it?

The unofficial successor to the C64, this machine was a Commodore experiement that failed. it had an 8bit CPU and contained 64K RAM. It could display 128 colours onscreen and was sold with four programs stored on ROMs



Perhaps the strongest display of software at the show was on Scavenger's booth. PC and Saturn games pushed back the boundaries

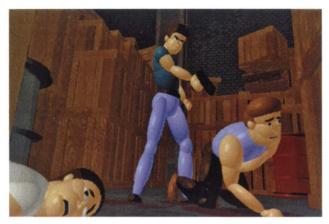
as usual. Except, of course, that it's not actually here yet.

Virtual Boy was at E3, of course, and the quality of software had improved greatly since its last outing at the Las Vegas CES in January. It will be released on August 14, priced at \$179.95. 'Virtual Boy is unlike anything currently available for the home,' says Nintendo's Peter Main. Well, he's not wrong there.



Urban Decay

innovative use of ellipsoids hasn't been taken up by the wider dev community, meaning that his next PC adventure retains a distinctive look Another aspect to give the game an edge is its attitude results in lashings of blood. This hotshot Tarantino has a lot



Gunning down miscreants in dark alleys is a satisfying experience. Urban Decay doesn't shy away from realistic depictions of death

Format: PC CD-ROM

Publisher: Psygnosis Developer: A Spencer

Studios

Release date: Summer 1996

Origin: UK

environments, graphic violence... Urban Decay is just like last year's stunning Ecstatica, only more so

Realistic visuals, atmospheric

the revolutionary ellipsoid engine that drove Ecstatica but transfers the action to a violent US ghetto at night.

'Ecstatica was just a testing ground for the system - we always had plansto take it further,' reveals Spencer. He has now established a dedicated game development studio and taken on several extra staff - there are five animators and a background artist working on the project.

The benefits are already apparent. When Urban Decay is complete, it will include over 2000 individual camera angles compared to Ecstatica's 230. It also features SVGA graphics and an increased number of ellipsoids, which allows greater detail and realism characters now smile and grimace, and their hands open and close when they grasp an object.

When Psygnosis presented Urban Decay at E3, the game's plot was still under discussion. 'It's gone out of the window since then,' admits Spencer. 'Although there will be speech, dialogue and plot, the emphasis will fall on the gameplay and action.'





The clever use of camera angles in Urban Decay could well make Alone In The Dark look relatively plain





ollowing the success of Ecstatica (Edge 13), Andrew Spencer is hard at work on its spiritual sequel, Urban Decay. The game uses



This foe is dispatched by kicking him off the gantry (top). Another attacker downed (above), this time with your trusty switchblade



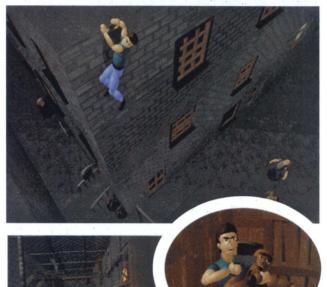
There's no doubt that violence will constitute a major part of Urban Decay. The game will almost certainly receive an '18' certificate when it is released next summe







You scale an old water tower (top left), only to find a chopper-borne SWAT team waiting (top right). Jump off and then hang on for dear life



The number of ellipsoids used in *Urban Decay* is double *Ecstatica*'s count. The result in much greater realism

Ecstatica

For those not familiar with Andrew Spencer's previous game, Ecstatica is an unusual combination of interactivity and cinematic scenes. The player has freedom of action for the vast majority of the time, but certain events trigger set scenes. But unlike in most games, these sequences are not pre-rendered; instead, the geometry of the character's actions (for example, climbing a wall) is called up and then rendered in realtime. The secret of the game's success is that these intermissions are short, with the player losing control for no more than a few seconds.

Ecstatica's mixture of action and cinematic style distinguished it from ordinary adventures, but the game was criticised for being over too quickly. Spencer intends *Urban Decay* to avoid falling into this trap.

Although Alain Maindron (the sole artist on Ecstatica) has now parted company with the project, his gory legacy continues. 'There is blood in Urban Decay,' acknowledges Spencer, 'but it will be more underplayed. I'm not saying it won't be a violent game, because it will. Most people will play it as a violent game and enjoy that aspect of it. The appeal of Reservoir Dogs is interesting and in some ways comparable. In Urban Decay you're pressing the button to blow someone's head off. And everyone seems to like that, not just sick people. People just have pent-up aggression.

Ultimately, though, violence begets violence and the player's actions inevitably return to haunt him. 'If the player acts like a complete psycho, he'll be treated like one,' says Spencer. In *Urban Decay*'s dark alleys,

retribution comes in the form of rival gangs, SWAT teams and traps. However, that doesn't mean the game will turn into some kind of anti-violence morality tale.

Andrew Spencer is anxious to pursue his own path towards that elusive goal, the interactive movie. Rather than just present a series of pre-generated sequences, he's determined to take the best aspects of the film world and add the elements of control offered by videogames. From what **Edge** has seen so far, he's heading in the right direction.



company's own Daytona conversion hasn't helped the console's profile. Here, it explains how new tools will turn things around.



sega development







ega now faces a tough test. Although it claims that over one million Saturns have sold through Japanese stores – and the US machine has already

stolen a march on its competitors – the future of the 32bit system now rests on the uncomfortably familiar maxim, 'software sells hardware'. Put simply, the next six months is going to be a crucial period for the Japanese company.

Just as Virtua Fighter singlehandedly sold the Saturn when it was released in Japan last November (98 per cent of all owners bought the game), it was Daytona USA that sowed the first seeds of doubt in the minds of gamers eyeing up Sega's 32bit machine. With its clumsy visuals falling well short of Namco's PlayStation conversion of Ridge Racer, the Saturn has recently been the subject of much scepticism in the games development community. After all, if Sega's own programmers can't get the machine to perform well, what chance has the average thirdparty developer?

Anxious about the lack of confidence in its system, Sega set about rebuilding the Saturn's credibility. At the Sega DevCon in the US earlier this year, it showed off its Sega Graphics Library, developed by R&D division AM2 to make better use of the machine's 3D graphics (in Japan, it was touted as a whole new operating system). The potential of the new graphics libraries was authenticated by a rolling Virtua Fighter 2 animation that has since been heavily publicised in Japan as a teaser for the Saturn game expected later in the year.

AM2 head **Yu Suzuki** is responsible for the conversion of Sega's arcade games. Currently overseeing work on Saturn *Virtua Fighter 2*, he concedes that converting high-end coin-op games does present a considerable challenge: 'The main problem is that we don't really think about the home version when we're developing arcade games. It's very important to make full use of the power of high-end arcade machines, so converting such games to less powerful hardware always requires intricate programming to obtain the best possible results. Despite this, we always aim for a perfect translation.'

Sega's rich heritage of superb arcade games is undoubtedly its strongest card. In Japan, a conversion of one of Sega's coin-op is guaranteed to shift at least 500,000 copies. However, as the company continues to strive for higher levels of graphical excellence with its Model 2 (and, soon, the PowerPC and Martin Marietta-powered Model 3) coin-op hardware, the Saturn is already finding it hard keeping up with the pace of technological advance.

'We don't think that next-generation software development has been perfected yet,' reckons Sega's **Yoshi Ishii**, producer of several Saturn games, including the spectacular *Panzer Dragoon*. 'There's enormous pressure on us at the moment to get great games out, but we're still on the upward slope of the learning curve.'

Unlike the PlayStation, the Saturn does not contain a dedicated geometry



Sega's Yu Suzuki (above) is supervising the Saturn conversion of VF2 (above left). Even at this stage, it represents a vast improvement over both VF and Daytona USA

engine for calculating polygons – instead, the twin CPUs handle all the calculation, and the VDPI chip, in conjunction with the frame buffer, draws 3D objects to the screen as distorted sprites. The decision to design the Saturn in this way was an attempt to cater for all needs: the two SH-2s were included give the machine some serious computational power, with the VDPI processor providing 2D performance that would outclass anything its rivals could offer. According to Sega, it was a question of 'balance'.

'The SH-2 was chosen for reasons of cost and efficiency,' claims **Kazuhiro Hamada**, section chief of Saturn development at the time of the machine's conception. 'The chip has got a calculation system similar to a DSP but we realised that a single CPU would not be enough to calculate a 3D world.'

As well as the VDPI chip, the Saturn has a second video processor, called, unimaginatively, VDP2. This gives the machine simultaneous playfields which are drawn completely independently of the CPUs – it's possible to have the CPUs calculating the maximum number of polygons, for example, while the VDP2 draws parallax backgrounds or even

Initially produced to demonstrate AM2's new SGL (Sega Graphics Library), this early VF2 demo runs at 60fps at 704x481 – the highest resolution possible on the Saturn









sega development







Virtua Fighter 2 on the Saturn is due in December. So far, Sega has finished the four most complex characters in the game: Rau, Pai, Lion and Shun. With two characters onscreen, the game runs at around 30fps



Mode-7-style distorted ones. This is a combination that the PlayStation would find tough going.

The VDP2 chip is seen

by many Saturn programmers as the key to really harnessing the power of the system. 'It's not difficult to use VDP2,' says Kazuhiro Hamada, although he admits that 'it takes plenty of time to find an effective use for it. There are so many different ways in which it can be employed.'

Scrolling and sprite handling is the area in which Sega is confident its machine

will outshine the PlayStation. 'To be honest, VDPI is not powerful enough to replicate the latest polygon arcade games,' concedes Hamada, 'but for sprite and scrolling games it's fine.'

Sega's ST-V (formerly Titan) arcade board, effectively a low-cost arcade PCB designed around the Saturn's internals) will make the most use of this 2D prowess. Although the arcade hardware is slightly different from the mass-production machine (and the development tools are different) this sharing of technology could prove to be a valuable hit factory for Sega. But it's not without its problems.

'The conversion from ST-V to Saturn is not quite as easy as you'd think,' confesses AM2's technical research manager, Tadahiro Kawamura. 'The ST-V board and Saturn have of course some common points and parts, but conversion from the arcade board to the Saturn requires that some parts of the game have to be reprogrammed.'

And, despite the success of Namco's Tekken in both the arcades and on the PlayStation, this type of undertaking is notoriously risky due to the rate of technical change in the coin-op market. What would assure success is some quality games that can take advantage of the Saturn's sprite-based

hardware.

board is designed primarily for fighting games, driving games and sports games,' elaborates Kawamura. 'We are doing some specific

doing some specific games for the arcade – after all, there are some games that

don't work so well in the home – but usually when we release a game for the ST-V, we are thinking of it making the journey to the Saturn.'

Despite the Saturn's ability to produce sophisticated 2D, what most developers are striving to achieve is smooth, fast 3D, and so far many have been unimpressed with the results they've managed to obtain.

Keiji Okayasu, software



Yoshi Ishii is one of SOJ's most respected software producers. Titles to his credit include Fantasy Zone, Hang On and Out Run

development chief at Sega Of Japan, acknowledges that there is mounting dissatisfaction among certain developers – and, more importantly, among Saturn owners – about the quality of the

'People complained about the glitchy polygons in Virtua. Fighter. For the sequel we're using different techniques'

machine's 3D. 'A lot of people complained about the glitchy polygons in *Virtua Fighter* during the replays, so for the sequel we're using different techniques,' he explains. 'Making the OS demo was a useful process, but converting *Virtua Fighter 2* will be a very different task. For example, in the demo there's no player control, so it was possible to get it up and running at 60fps. It will be much harder to do that now we have two





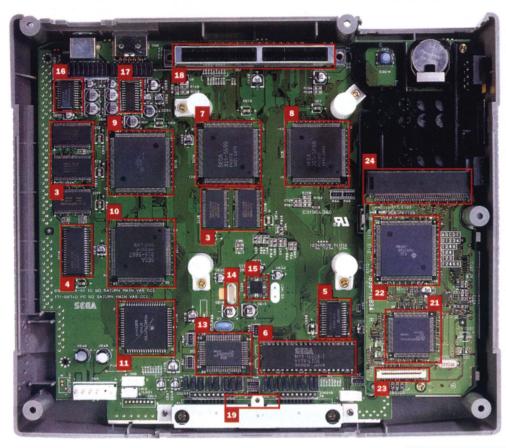








Inside the Saturn

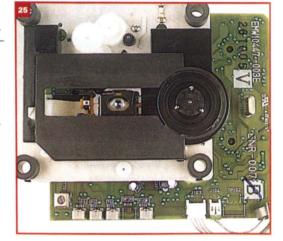




Taking a screwdriver to the Saturn reveals *a lot* of silicon. Hidden beneath the CD interface lie the twin SH-2 CPUs, SCU, SDRAM and RAM (see inset, far right). The CD-ROM mechanism (below right) contains 4Mbit of buffer RAM and even more chips...

- 1 2x Hitachi SH-2s @ 28.6MHz, 25 MIPS
- 2 16Mbit SDRAM for SH2s
- 3 12Mbit SDRAM for VRAM and frame buffer
- 4 512K sound DRAM for 68EC00
- 5 32K SRAM for battery back-up
- 6 512K IPL (initial program loading) ROM -
- initiates the Saturn's boot-up sequence 7 VDP1 32bit video display processor, sprite processor and texture-mapping engine with dual 256K frame buffers
- 8 VDP2 32bit video display processor with five simultaneous scrolling backgrounds and two simultaneous rotation fields
- 9 Processor controller & LSI for graphics 10 Saturn Custom Sound Processor (SCSP).
- Contains Yamaha FH-1 DSP (11.3 MHz) and DRAM controller for sound processor
- 11 Sound CPU Motorola 68EC00 @ 22.6 MHz

- 12 System control unit @14.3 MHz connects the Saturn's three buses
- 13 System manager and peripheral control 4bit Hitachi chip including battery back-up
- 14 Crystal oscillator
- 15 Integrated circuit clock controller
- 16 Digital to analogue converter
- 17 RGB encoder (made by Sony)
- 18 Cartridge slot
- 19 Connector for joypads
- 20 Connector for CD interface
- 21 SH-1 processor for CD drive 22 MPEG interface
- 23 CD drive board interface
- 24 100-pin CD drive board connector
- 25 Double-speed JVC CD-ROM drive with 320K/sec data transfer rate













sega development



Sega's Tadahiro Kawamura, manager of AM2's technical research section, developed the new SGL development tools. Prior to that he programmed the Virtua Racing coin-op

characters onscreen.'

When Saturn projects like Virtua Fighter 2 and Virtua Cop were being planned as early as last year, AM2 chief Yu Suzuki requested that a 'smarter and more convenient' set of development tools be

produced to assist in the conversion of arcade games to the Saturn and help with general software development. Together with Sega Of America and numerous thirdparty developers, Sega Of Japan carried out research in order to find out which aspects of the present development tools should be improved.

This was the impetus behind the development of the Sega Graphics Library – produced by Tadahiro Kawamura. Combining tools for modelling, animation, textures and fractal graphics with extra programming information for the central processors (the issue of juggling a main CPU and a sub-CPU is one that Sega has been especially keen to address),

SECOND SE



Previously, the Saturn development system included a P-Box, or programmer box (left), instead of a production Saturn. In the new system the P-Box has been replaced by SOA's CartDev box, which sits below the Saturn, and a cartridge which interfaces with the PC or workstation. Sega's 'official' development set-up (right) includes an SGI Indy, Softimage, CartDev, SNASM2, and AM2's SGL

it should provide a significantly enhanced development environment.

For the most part, the Saturn's complex design has done it few favours. With seven independent processors, getting the whole architecture to operate efficiently is not easy. SN Systems' Andy Beveridge, designer of the PSY-Q development system for the Saturn (as well as its PlayStation equivalent), admits: 'lt's a

real coder's machine. For those who love

to get their teeth into assembly and really

'The conversion from ST-V
to Saturn is not quite as
easy as you'd think. Some
parts of the game have to
be reprogrammed'

hack into the hardware, the Saturn will probably pack a few surprises. It's going to take some time before we'll see what it can really do.'

LA-based developer Scavenger (responsible for the superb Subterrania on the Mega Drive and Saturn titles Vertigo and X-Men) recognises the Saturn's strengths, although it had to develop its own set of libraries to exploit the hardware efficiently.

'The Saturn is very fast at drawing single pixels using its processor, while the PlayStation has to go through its polygon engine,' explained the company's lead Saturn programmer. 'That gives the Saturn programmer more flexibility. However, the Saturn does have the tendency to write polygons that are not seen. Overall, though, it has more calculating power than the PlayStation.'

CPU throughput is indeed one major area in which the Saturn can boast superiority over the PlayStation. Granted, the Sony machine is able to calculate more geometry and display more polygons, but in terms of computational power the Saturn definitely has the edge.



Model 2-based games such as AM3's Sega Rally are programmed in assembly and use vastly more powerful hardware than Saturn











magazine

August



EDGE23

The official development system



Cross Products' managing director Ian Oliver (right) and general manager Jim Woods. The Leeds company is now owned by Sega

eeds-based Cross Products is the Sega-owned firm behind the Saturn's official development system. Formed by ex-game coders from Realtime Games (responsible for classics such as Starstrike and Carrier Command),

Cross Products has grown into a 25-strong company specialising in cross-platform development systems.

'I can remember hating the tools we used back then,' recalls managing director lan Oliver. 'So we joined up with our neighbours, Vektor Grafix, and set about writing our own development software.'

After designing systems for home computers and consoles including the Amiga, ST, SNES and Mega Drive, Cross Products was bought by Sega Of America over a year ago. Since then it has worked closely with Sega to design an efficient authoring system for the Saturn

Cross Products' Saturn system — which, like all its development software, comes under the SNASM2 label — uses a mass-production Saturn (previously it was a bulky programmer box supplied by Sega) with a switch that allows the user to toggle between the Saturn's internal drive or a CD emulator. Connected to the Saturn via the cartridge port is SOA's CartDev hardware which effectively turns the production Saturn into a development station. This, in turn,



Cross Products' development system works with SOA's CartDev box (left) and also the company's new Mirage CD emulator (right)

While Sega supplies its licensees with full documentation on the Saturn hardware plus graphics and sound libraries, Cross Products supplies the CartDev, CD emulator and a modified Saturn, as well as the full suite of development software (including assemblers, linkers, debuggers, C compilers, etc). Cross Products can be reached on 01132 429814.

The alternative: Psy-Q

ristol company SN
Systems has not only
produced the official
PlayStation authoring tools
but is also responsible
for a Saturn
development system
which does away with
Sega's CartDev box and
uses a simple cartridge

The Psy-Q system uses SN System's own C compiler shell program and its proprietary

which plugs into a PC.

assembler and linker. One important benefit of the system is that it works in a similar way to the company's Psy-Q

Indy via SCSI.

Playstation kit, so
developers don't have to
re-learn a new system if
they port their project
over to the Saturn.

connects to a PC or SGI

Psy-Q is priced at a similar level to SNASM2, with the basic system costing around £3000. SN Systems can be contacted on 0117 9299733.

SNASM2 authoring for Saturn Assembly language source code SEGA Saturn libraries SNASM2 SH2 assembler SNASM2 linker or GNU linker COFF file SNASM2 in Straightforward for developers. The diagram (right) shows the different stages involved













E3 provides an opportunity to sit down with NOA's big cheese. Among the topics on the agenda today: why optical storage isn't part of the Nintendo game plan, how the Ultra 64 joypad will knock our socks off, why Virtual Boys a risk that consumers may not accept, and the need to grow gaming's demographics.





Despite widespread doubts about its future, Nintendo is still the colossus of the games world. And the head of the firm's US division is one of the most powerful men in the entire industry. Nintendo Of America chairman Howard Lincoln talks to Edge



oward Lincoln is a lawyer by training. He began his career as a judge advocate in the US Navy during the Vietnam war, and went on to become a

corporate attorney in Seattle. It was there that he first encountered a small Japanese coin-op firm called Nintendo, for which he helped draft a contract establishing sole US distribution rights.

Lincoln was later called in by Nintendo to help with the copyrighting of Donkey Kong, and by 1982 his time was almost completely taken up with Nintendo business – tracking down coin-op counterfeiters and playing million-dollar hardball with a litigious MCA.

Asked by NOA president Minoru

Arakawa to work for him, he accepted on condition that he be involved in all aspects of the business, not just legal affairs. He has played a major role at NOA ever since, first as senior VP and now as chairman.

Edge spoke to Howard Lincoln at the recent E³ show in LA, where Nintendo was speaking softly but brandishing what it hopes will be several very big sticks.

Edge Why, in a nutshell, was the Ultra 64 delayed until 1996?

Howard Lincoln The reason was a quality issue. Given the quality of 16bit games like Donkey Kong Country and then Killer Instinct and Donkey Kong Country 2, we felt that we needed more time to get the quality level to the point where we were satisfied. The hardware is done... when I say that, there are always things which have to be

tweaked, but SGI has accomplished what it set out to do – create the chips that we were all counting on – and we're very pleased. But hardware is only one part of the story. The other is this software issue, and I think it would have been a mistake to rush this product to the market. You only get one cut at this business, and I think gamesplayers are very conscious of the quality of software.

Edge It has been rumoured – and Hiroshi Yamauchi hinted as such – that Ultra 64 may in fact launch in December in Japan.

HL It's possible, and I'm aware that Mr Yamauchi has recently commented on that. Certainly, it is possible to launch a new hardware system in Japan in December. If the product is shown at the Shoshinkai show in late November, for example, it's logistically possible. The US market is an entirely different market and if we were going to launch in, say, November in the US, we really have to be in a position where we can tell our dealers now with 100 per cent assurance. Just the lead times are different for the US market; the logistical problems are different. NCL may well launch in December in Japan, but I can assure you that Mr Yamauchi is the person who is going to make that decision. So all I'm doing is merely speculating on what he may or may not do - he's going to make that call himself.

Edge How, then, was Sega able to roll out the Saturn so quickly in the US this spring, apparently out of nowhere?

HL I'm certain that Sega has been working on this introductory launch for a number of months – this didn't just happen out of the



blue. And because they were only working with a limited number of dealers – they were not making this available to all of their dealers – they could do it with a certain degree of confidence that it would not slip out.

Edge What parallels can be drawn between what we're seeing now with the launch of Saturn and Ultra 64, and the launch of the Genesis and SNES?

HL Well, if there were any mistakes made in the launch of Super NES, the timing – a year and a half after the Genesis – was not one of them. By the end of 1991 our installed base in the US 16bit market was greater than Sega's, even though Sega had been there since 1989. It was after that that Sega did a lot of things very well, in terms of pricing games like Sonic and in terms of marketing – television advertising and what not. I think the only parallel is that in addition to the necessity of having a powerful game platform, you have to have good games. It's got to be priced right and it's got to be marketed right.

One major advantage we have over Sega – other than the fact that on a worldwide basis our market share is much larger – is our financial condition. And that financial condition is only going to improve, given the fact that Sega – and, for that matter, Sony – are selling these new hardware platforms under cost, and that they are willing to lose a considerable amount of money. Presumably, they intend to pick it up or get even on the software, and that's a risky strategy because it involves millions and millions of dollars of losses that they will necessarily incur in

\$50-100 per unit? I don't think so. It's clear from the feedback we've obtained and what we've heard from dealers that Saturn is incurring a loss.

Edge You can now pick up a Super Nintendo for \$100. Are you saying that's breakeven strategy for Nintendo?

HL We did not incur a loss on the sale of

'Sega and Sony are selling these new platforms under cost. That is a risky strategy because it involves millions and millions of dollars of losses that they will necessarily incur in 1995 in the US'

1995 in the US market. We, on the other hand, are not going to be incurring any losses in the US market.

Edge Surely the business model that you've just described is the traditional one in the videogames industry?

HL I don't think it's the tradition in our industry – at least, it's not Nintendo's tradition. The tradition is to sell hardware at a smaller profit margin than the profit margin for software. But would Nintendo introduce a hardware product knowing that in the US market it is going to lose

SNES hardware in the US either when we introduced it or right now. I was really focusing on what our strategy has always been in terms of product launch.

Traditionally, both at launch and during the life of that hardware unit, we have not sold hardware below cost.

Edge How does 3DO fit into all this? Sega and Sony are taking anything up to, say, a \$100 dollar hit on the cost of the hardware, and you've said that you're not going to take a loss but are prepared to cut your profit margin on software. What are



interview

3DO's chances against competitors who are prepared to do that?

HL 3DO is different because you've got manufacturers like Panasonic, Goldstar and what not who necessarily have to make a margin of profit on the hardware, so the 3DO model is much different from the typical Sega, Sony and Nintendo model. It's hard for me to compare the two, but the 3DO fiasco has proven two things beyond a shadow of a doubt. One, that you only get one crack at this thing - you don't get repeated opportunities to get your product or your pricing or your software right. The second thing is that you don't rely on other people to make good games. If you assume that these games will somehow fall out of the sky, you are going to be sorely disappointed. So the only thing that they have successfully accomplished so far is to sell a lot of development systems. But as near as I can tell, certainly in the US market and the Japanese market, the product has not been successful. Does that mean it will never be successful in the future? Well. who knows, but it is difficult for me to conceive that that

product is anything more than just a lot of hype.

Edge Is it true that selling hardware or software at a different price in the US than in Japan infringes ITC trading laws?

HL There are certainly laws against dumping. There are laws that are unique to the US in that respect.

Edge The single biggest advantage the Ultra 64 has in terms of costing and price is the absence of a CD-ROM player. Was cost a major factor in your decision to make the Ultra 64 a cartridge machine?

HL It was one of the factors, I wouldn't say it was a significant factor. The decision to go with cartridges had more to do with the type of games that we were thinking of making and how we thought we could quickly get a large installed base. There is no question that the absence of a CD-ROM player reduces the cost of the hardware but I don't think it was analysed quite that way. I am told by Tom and other people at Silicon Graphics, as well as our Nintendo engineers, that some of the Ultra 64 technology simply cannot be done using a CD-ROM player as a software storage medium. Don't ask me what it is because I'm not a technical person. I know the SGI people have made that point.

Edge Assuming Sony does manage to launch at \$299 this autumn, would it be reasonable to assume that the price will drop to match the Ultra 64's \$249 price tag at launch next spring?

HL No, I don't think that is a fair assumption. It's an equally fair assumption that the ultimate retail price of the PlayStation will not be \$299. Until the product reaches retail shelves in September, the price is just an announced price. Things have ways of changing. Edge It's what hasn't been said about Ultra 64 that everyone is talking about now. There are all sorts of unanswered



'Sony have the financial resources to get into

the market and are quite capable of making

excellent hardware systems. But the jury is

still out on their ability to make a videogame'

- Edge Could you tell us a little bit about possible innovations for the Ultra 64's joypad? The Ultra 64 was conceived as a 3D world creator, and obviously the joypads we're used to are designed for 2D worlds. Many people now believe that a revolution needs to come in game controllers. Can we expect to see that in the Ultra 647

HL You are very astute and you are very accurate. The game controller that you'll see from Nintendo for Ultra 64 at the Shoshinkai show in November will knock your socks off. It's the first thing you'll want to comment on. I can guarantee it. Edge Who designed it?

HL The controller is designed internally and it is everything that you just speculated on. When we produced the shots of the Ultra 64, you saw the cartridge and you saw the hardware, but you didn't see the game controller. Nintendo has a history of making really exceptional game controllers, whether it's an NES or a Super NES, and you can expect history to repeat itself. In fact, I'll tell you that we think that, of all of

> the aspects of Ultra 64, the game controller will be the cat's miaow.

Edge Can we expect the system to look the same in every country?

HL Hopefully.

Edge And will it look like the version that's been exhibited already?

HL Yes. In terms of colour I'm not certain - we haven't put the finishing touches to it yet - but in terms of shape it's pretty close to the final version.

Edge What about the partners chosen for the Ultra 64? Obviously, Silicon Graphics speaks for itself, but there were some surprises over the last couple of years. Angel Studios and Paradigm are not the people that you would have immediately thought of as partners.

HL That's true, but the technology that we're going to be coming out with is going to require expertise in the area of graphics, and companies like Paradigm and Angel Studios are very highly regarded in the computer graphics area. You're absolutely right that Paradigm is not a videogame developer, but the games that come from both of these companies will be quite dramatic in terms of their use of graphics. And you should keep in mind that both of these companies are working with Nintendo - they are not thirdparty publishers from outside the company. Edge How is that working out, because



questions. Firstly, obviously it's a cartridge machine, but Peter Main said a year ago that there was a CD-ROM player in development planned for launch after the release of the machine. Is that still the case?

HL About three or four months ago Mr Yamauchi commented that Nintendo was working on a storage accessory for Ultra 64, and that product was not the CD-ROM player. A further announcement will be made by Mr Yamauchi on that subject at some point in the future, but I can confirm that there is not a CD-ROM accessory planned for Ultra 64.

very few people recognise the huge difference between developing 2D games and developing 3D games.

HL One thing Nintendo has always been very strong at is launching great software. I think the business has changed a little bit given the sophistication of the technology and the need to find people who are capable of programming this 3D environment. Nintendo has necessarily had to reach out to bring into its stable companies which have not traditionally been involved in the creation of videogames. We have excellent relationships with both Paradigm and Angel Studios. The work that we have seen from both companies today is outstanding. Mr Takeda, who is in charge of the Nintendo Ultra 64 project, is very, very pleased with what he has seen from both of these companies. Mr Miyamoto is involved, as are other creative people from Kyoto.

Edge We remember the glory days when the Super NES was first launched, with titles like F-Zero, Pilotwings and Super Mario World. Why did Japan never really exploit those games with sequels of equal weight?

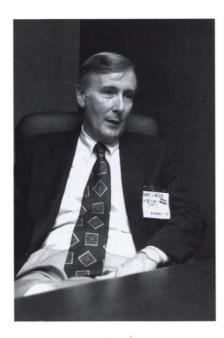
HL I think there are sequels for those games – let me put it this way, there are a number of games that Nintendo work on which do not see the light of day, because we're measuring the games that we're working on against the same quality level. There may well be sequels which I cannot tell you about or they are simply not public. The other reason is that people like Mr Miyamoto are not told: 'Okay, you are now going to make a sequel to *Pilotwings*.' That's not the way we treat our creative people, for good reason. So a lot of it has to do with their own choice as to what they want to work on.

Edge Don't you find it frustrating that most of your licensees haven't got the ability to take advantage of the SNES to the degree that a company like Rare can?

HL Well, I don't know if I would call it frustrating. I think that it's disappointing but in a way it's a reflection of the nature of this business – it's a very creative business. It's almost the same thing as saying, aren't you frustrated when everyone can't make it to a Steven Spielberg movie? Well, yes, I'm frustrated, but I'm sure a lot of people who make movies are frustrated.

Edge It must be more frustrating for the thirdparties than it is for you...

HL Yeah, I think so, but the things that Rare are doing are things that any thirdparty can do. Let's face it, Rare should be complimented on what they did. They set out deliberately to learn this new technology. Certainly, there was a period



when they were not making a lot of games, but they invested in the future and there's nothing that prohibits anybody else from doing that.

Edge Do you think that Sega has and advantage over Nintendo in terms of its very active and high-profile arcade division, with titles like *Daytona Racing* providing powerful brands and a great trickle-down source of expertise?

HL I don't know that I would categorise it as an advantage over Nintendo, but I certainly would agree that one of the reasons for Sega's success in the home market has been its roots in the coin-op market I think if you look at the people at Nintendo or the people we are working with, our outside developers, they too have roots in the coin-op business. They may not have made a coin-op game in Kyoto, for example, but certainly Mr Miyamoto is rooted in coin-ops, as are people like Joel Hochburg and Tim and Chris Stamper. And let's face it, Killer Instinct did very well as a coin-op game. So I think that probably what's fairer to say is that any company that's in the home videogame business that has a heritage in the coin-op videogame business has an advantage, particularly over companies that have never been involved in the manufacture of coin-op games. There is a discipline that seems to be learned in the art of making games that you tend to learn better if you are making a coin-op game as opposed to a computer game.

Edge In Japan, Nintendo has had several very high-profile stabs at establishing communication networks and linking Nintendo hardware. Is that something that you see happening in the United States?

HL I think that's certainly where gaming has a big future. Whether it's on the Internet or something along the lines of the Catapult or what not remains to be seen. We're very interested in that and have worked in the area for some time, but I regard that as just another hardware platform, and the key to success in that area is making a network game that everybody wants to play over and over and over again. It's funny, we've had a lot of success. It isn't anything to do with networks but we have been very successful with this Gateway project, putting videogames into hotels and into airplanes. So if we can put them in hotels and we can put them in airplanes, we can certainly come up with networking.

Edge Do you think the Sega channel is a concept that could grow?

HL I think it's a little bit too early to tell whether the Sega Channel will be a success. Certainly we are watching that very closely, but I think it's a little bit premature. They've invested a great deal of money in it, but the jury is still out on whether it will be successful or not.

Edge How important to Nintendo is Virtual Boy compared to Ultra 64?

HL Well, certainly in the lapanese and North American markets in mid-1995 it is a very important product. It's a product that's going to be launched in Japan in July and North America in August. We have high hopes for this product. We think that at \$179.95 with the game included, the product will do very, very well, particularly in the demographic area that we are targeting, which is boys 7-14. We're very pleased with how the quality of the software is improving, and Mr Yokoi has done a really fine job in not only coming up with the product but in coming up with really excellent software which will be available at launch. Our projections are for 1.5 million hardware units in North America and 1.5 million in Japan. So it's a very important product. Also, it's exclusive to Nintendo - we're not competing with Sega or Sony for Virtual Boy, and that has

Edge Is it a risky move by Nintendo? Was there much internal debate about whether it should be released?

HL No, I don't think there was any of that kind of internal debate. Mr Yokoi, who is the creator of Virtual Boy, is the guy who came up with Game Boy and a number of other products – for example, Game & Watch. With a proven track record like that, I don't think you're going to have a lot

interview

of internal debate. You know about the reliability of his products. I think that what happens is that it's such a new and unique kind of thing, and the gaming experience is so different, that people have a tendency to step back and say, 'Wow, that's new or that's different, is this going to work or not?' Maybe I'm just a fatalist, but I think that we will do a first-class job of marketing that product, and ultimately the consumers are going to make the decision. The proof of the pudding will come this fall and this Christmas.

Edge There are arguably three major problems associated with Virtual Boy. Firstly, despite the advances you've made in the technology, the machine still has a monochrome display, and perhaps people are now expecting more than that. Also, gamers have to remain in one position to play. And thirdly, the 3D effect alone doesn't actually bring anything new to the gaming experience.

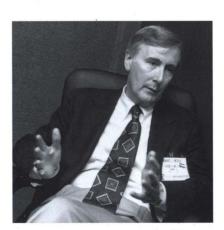
HL I can see that. I think there are limitations and advantages in any videogame product and any videogame experience, and I'm sure all the disadvantages you've explained can be quickly turned into advantages, particularly by our marketing people. My recollection is that there were similar questions about Game Boy on the part of a number of people when we launched it. Would, for example, anyone have predicted that seven years after its launch we were still selling three million Game Boys a year in the US? I don't think so. So yes, the display is monochromatic, but it does produce the 3D experience. Yes, you have to look through it as opposed to playing it on a TV set and all that. But the reaction that we have received from focus groups, particularly in that age category of boys aged 7-14, has been very, very high. Whenever we introduce a product like Virtual Boy or Game Boy or Super NES, there are always inherent risks, but ultimately the product is judged by our shareholders in terms of whether it sells and whether the company makes a profit.

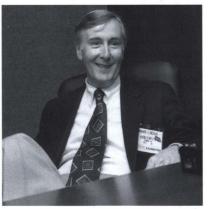
Edge It's gone down in videogames lore that, on seeing the Game Boy, Sony said that it should have been a Sony product. Designers in Sony's lab apparently even got the sack because of it. Do you think they're saying the same thing about Virtual Boy?

HL I really don't know. I didn't realise that they had said that about Game Boy. Virtual Boy is like any other consumer product — you're always taking a risk that it will not be accepted. It's just like any movie — people don't actually start out to introduce bad movies.

Edge Does Nintendo have plans to tackle the older gamesplayer? The core market is obviously 7-14 year old, while Sega, for example, seems to be going for a more broader age group because they have more disposable income.

HL Well, I think Nintendo are just like Sony and Sega. We'd love to be able to expand the demographics of our core users. We would love to have 60-70 per cent of our primary gamesplayers aged 7-70, but that's not reality so far in the marketplace. While Sega and Sony have indicated that they are going after older demographics, that's not a self-fulfilling prophecy. It is argued that the people who will more than likely spend most of the money on Ultra 64, particularly the software, will not be the traditional videogamers and the traditional demographics. If the demographics expand simply because the price is increased or the games become, say, more realistic and therefore more appealing to a wider demographic range, that's great - it will just be my speculation if that will occur. Certainly, if you eliminate many of the things that you find in traditional videogames from a technology standpoint, such as the flickering images, the 2D shape and movement of the characters, the





blocky polygons and what not, you in turn create seamless 3D graphics. It would seem that that might appeal to a broader demographic. That's what Sega and Sony think and that's what we think too.

Edge About the idea of more sophisticated imagery appealing to an older audience... is there a suspension of disbelief or a leap of imagination required to identify with these little blocky characters that somehow children are able to do and adults aren't?

HL Yeah, I think that's true. I mean, there's got to be some reason why kids tend to like videogames more than most other people. Maybe they get more into the games than adults because of some of these things like small characters – fuzzy characters, however you want to put it. I hope that the demographics expand and I don't disagree with Sony and Sega for having that view, but we're certainly not going to put our initial marketing dollars against demographics that are not proving to be where our core audience is – that would be absolutely loony.

Edge Who would you say was Nintendo's greatest rival?

HL I think we regard both Sega and Sony as very strong competitors in this business. Certainly Sega, because they know how to make good videogames and hunt a market down, and they have established themselves in major markets around the world. We also regard Sony as a legitimate competitor because they have the financial resources to get into the market and from a hardware standpoint are quite capable of making excellent hardware systems. At this point, the jury is still out on their ability to make a videogame. Even though they have been in this business for some years now, they haven't made what you would call a world-class videogame. So that side of the coin remains to be seen.

Edge Have you enjoyed the battle with Sega over the years?

HL Yeah, I have enjoyed it, sure, but it's not personal.

Edge Do you talk to Tom Kalinske if you pass him in the corridor?

HL Yeah, I like Tom a lot. I think he's a neat guy and I enjoy being around him. But we are competitors and, you know, there are going to be times when I'm taking shots at him and he's going to be taking shots at me, or I'm going to be taking shots at Sega and they're going to do everything they can to convince people that they walk on water and Nintendo doesn't, but it's all part of the game. It's certainly clear that the level of competition is very high and the people who really benefit from this competition are the consumers.

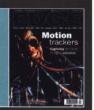




And the winner is ...

Edge 171 on sale now

prescreen



It may be a little late in taking a deeper look into the super-competitive world of PC FPS production, but this article at least picks a good target: Duke Nukem 3D looks incredible, and 3D Realms evidently has a business plan to back up its creative bent. Its next round of games sound even more interesting...

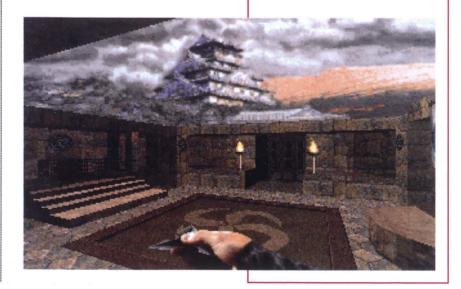


3D Realms

Duke Nukem 3D (above), Blood (below) and Shadow Warrior (bottom left)



3D Realms has already raised a few eyebrows with *Terminal Velocity*. But it seems that was only the beginning. **Edge** makes its way to the Lone Star State, where the company is busy building a 3D empire



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orget swimming pools and conservatories - to get one over on the loneses these days, it seems you've got to have your own 3D engine.

Argonaut has just proudly put its BRender engine on display in FX Fighter. Washington DC-based Bethesda reckons its Xngine, to be used in the forthcoming 10th Planet and Dagerfall, is at least three times faster than everyone else's. Id will doubtless have similarly wild claims to make about its Quake engine. And in the suburbs of Dallas, Texas, 3D Realms is putting the finishing touches to its Build engine, which will, of course, be better still.

But, rather than 3D graphics technology or its recent success, Rise Of The Triad, 3D Realms is perhaps best known for pioneering the shareware concept of PC games publishing, through its alter ego, Apogee. Having spread cut-down shareware versions of id's Wolfenstein 3D across the world's bulletin boards, it found that people were only too happy to send in their registration fees to obtain the full version. And id, impressed by the success of the technique, exploited it to its full extent with Doom.

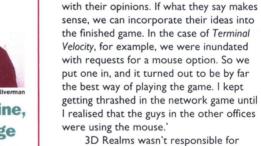
'We started marketing our games as shareware because it was an inexpensive way to get started,' explains 3D Realms president George Broussard, striding through the company's rapidly expanding network of offices and corridors.

'It's a method that works very well for us,' adds Scott Miller, 3D Realms vice president and also, confusingly, Apogee's co-president. 'And not just in terms of sales. We can put out an early beta version of a game and invite people to contact us





With the Build engine, created by teenage programming genius Ken Silverman, 3D **Realms** is moving into 3D games in a big way



3D Realms wasn't responsible for developing Terminal Velocity, though; that was the work of Terminal Reality (which is producing an uncannily similar game for Microsoft as one of the first Windows 95 releases). But with the Build engine, created single-handedly by teenage programming genius Ken Silverman, 3D Realms is moving into 3D games development in a big way. Indeed, the company was launched as an offshoot of Apogee for this very purpose.

Striding around a space station in Duke

Nukem 3D (above and below). Duke kicks

and shoots his way through his enemies

Duke Nukem 3D is the first and most talked-about - game to make use of the Build engine. It picks up where the platform game Duke Nukem 2 left off, with Duke returning to Earth to find it occupied by aliens. But it couldn't be a more different game, as George Broussard explains: 'The main advantages the Build engine has over something like Doom are that you can walk over bridges, have true rooms above rooms, swim underwater, have mirrors on the walls, have translucent objects, ride in vehicles like shuttle cars or subways, look up and down, duck, crawl, jump, fly...'



prescreen

Broussard then proceeds to demonstrate these capabilities on a PC running the game. Duke is standing in an LA street next to an burning police car. A key is pressed and a jetpack launches him high into the air. As the devastation continues in the streets below, he touches down on top of a skyscraper and makes his way to the edge of the roof, from where we can peer down into the streets far below. Doom purists claim there's no need for a look-up-and-down facility, but once you've experienced the vertiginous delights of Duke Nukem 3D, you'll think differently.

3D Realms is hugely enthusiastic about Duke Nukem 3D, and eager to show off just how much work it has put into making the environment as interactive as possible. The Build engine's flexibility means that pretty much anything goes in Duke Nukem 3D. In the moonbase, you can fire a rocket through a door and across a room to blow out the window on the other side. The resulting depressurisation causes all the aliens in the room to be sucked out – and you too if you don't close the door in time. You can open cupboards; destroy furniture;



Some of the rooms in *Shadow Warrior* are impressively large (above). An oak-panelled room is home to these fellows (below)



With its blood-soaked, atmospheric 3D environment, *Shadow Warrior* owes an obvious debt to the seminal *Doom*

use mirrors to look round corners; blow

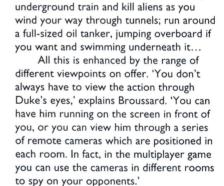
through the ducts behind them; stand on balconies and fire on the aliens below; walk into bars and shoot all the bottles behind them; watch wounded aliens grovel at your feet before kicking them in the head; shrink aliens with a special gun and squash them under your boots; jump aboard a moving

out ventilation panels and then crawl

Shareware works very well for us. We

very well for us. We can put out an early beta version of a game and invite people's opinions'

Scott Miller, vice president, 3D Realms



And then there's the replay facility: 'When you've finished a game you can replay the whole thing, editing the camera angles as you like. And because there's so much going on the whole time, the result looks more like an "interactive movie" than anything else I've seen. In fact, perhaps the future of interactive movies lies in games like this, rather than ones which take pre-recorded video footage and try to make it interactive.'

Nearby, a 3D Realms staffer is drawing rectangles on a grid displayed on his computer screen. 'That's the



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construction tool we use to design *Build* games,' explains Broussard. 'We've written it ourselves to make the process as simple as possible. And we'll be including it with the game, as we want to encourage players to design their own levels and circulate them freely.' Would-be *Doom* designers have no such luxury, having to make do with the data formats supplied by id.

Being developed alongside Duke Nukem 3D, although a little behind it, are a number of other Build games. One of these is Shadow Warrior, which places you in an Oriental fortress populated by shurikenwielding Ninjas. Rather unfairly, however, it arms you with a pair of Uzis against which martial arts seem a little ineffectual.

Then there's *Blood*. 'This is a bit more of a gothic horror game that will be very spooky to play,' enthuses Broussard. 'The evil subconscious thoughts of mankind have taken on material form, and you've got to run around a castle attacking them with pitchforks and things. What's especially good is the way you can combine objects.'

You can, for example, pick up an aerosol, which isn't much use on its own, but if you combine it with a cigarette lighter you've got yourself a flamethrower. And there's also a power-up which makes you invincible as long as you keep killing monsters, so you have to dash around in a crazed frenzy to keep the effect going.

The graphics look appropriately dark and moody, with zombies and grim reapers wandering around, and there's an excellently designed fireplace in one room,



With four games scheduled for release over the next nine months (*Blood*, above), 3D maze addicts are in for a treat

'We have an even newer 3D technology that we're using for our next games. Most – if not all – of our future games will feature true 3D movement with six degrees of freedom'

George Broussard, president, 3D Realms



In this scene of *Blood* an improvised flamethrower is your only form of defence against a variety of bloodthirsty nasties

with the flames blazing in the mouth of a huge skull.

Finally, there's Ruins, which is due for completion early next year. You play a modern-day Indiana Jones type who has discovered that the pyramids were built by an alien race, who plan to use them as mind-control devices to enslave mankind. It sounds horribly like Stargate, but, says Broussard, 'You'll actually feel you're in ancient ruins and pyramids, pushing blocks of stone, discovering secret passages and blasting mummies at every turn.'

So, what of the future? More Build games? 'Actually, no,' says Broussard. 'We have an even newer 3D technology we're using on our next games. Most – if not all – of our future games will feature true 3D movement with six degrees of freedom. You can expect to see some of these in the first part of 1996.'

It's a measure of how fast videogames are moving that even before *Build* is finished, it's already obsolete.



Impressive parallax effects are achieved in Duke Nukem 3D (above). Big guns are, of course, an essential element too (right)



Sheffield Wednesday goalkeeper Chris Woods makes his Edge debut to illustrate the art of capturing human and in some cases animal — movement for use in games. Though techniques such as rotoscoping have been around for years, new digital techniques are revolutionising the animator's craft.



Motion capture

With gamers demanding ever-greater levels of realism, more and more developers are turning to motion capture – the science of translating real-world movement into computer animation. **Edge** examines the latest technology in this fast-moving and increasingly important field



s the graphics capabilities of domestic hardware have improved, traditional 3D animation techniques have been found increasingly wanting. Character animation has always been one of the biggest obstacles in the generation of

convincing graphics; despite huge increases in processing power, more advanced rendering techniques and all the other weapons in the computer animator's armoury, natural movement has remained an elusive goal.

Dean LeCoe, of American motion capture systems manufacturer Motion Analysis, puts his finger on the problem: 'You could draw an interesting environment – say a city street and give it an atmosphere. You could put the lights in, you could put in the shading, you could make something very realistic. But when you tried to walk a person through that you lost any sense of realism because, probably deep in our primitive brain, we can watch a person walk from a great distance and tell instinctively whether they're young or old, healthy or unhealthy.'

This is because, of all the visual information received by the brain, it's movement that is processed first, ahead of both form and colour. It's a survival instinct left over from our existence as a hunter/gatherer, and a fundamental part of our genetic make-up. It's also very difficult to fool.

Despite advances in the 1980s such as the inclusion of hierarchical skeletal systems in animation software and the introduction of inverse kinematics (where joints are set up as

Motion capture



control points which the animator uses to determine movement), 3D computer animation of human motion has never quite managed to be convincing. Which is why an increasing number of leading-edge games companies are now turning to motion capture, where a performer's movement is translated into raw data and then ported it into an animation package. The technology enables developers to create computer character animation that is more fluid and more realistic than anything that can be achieved with any other system.

Realism is the key. 'You can hold the illusion, the suspension of disbelief, longer if the character moves realistically,' comments **Carl Swanick** of Lore Design, whose *Highlander* is one of a range of new games using motion capture techniques to impart greater realism to animation.

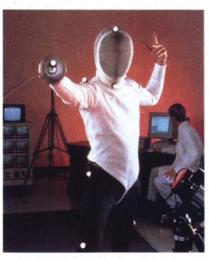
These games include current sensations such as *Tekken*, as well as forthcoming titles like Acclaim's *Alien Trilogy*, Gremlin's *Actua Soccer*, and Psygnosis' *Powersport Soccer*. But the number of games employing the technology is by no means representative of the amount of attention the industry is showing



A typical optical set-up. First, highly reflective balls are attached to set points on the subject. Strobe lights then play over the capture area and sensors record the movement of the balls

'There's an almost overwhelming interest in motion capture. There aren't that many people using it yet, but the interest is certainly there'

to the field. 'We only started venturing into it in the past six months,' says **Pete Meddings** of Oxford Metrics (which has already sold one of its Vicon 370 optical systems to Probe Entertainment), 'but there's an almost overwhelming interest in



23 markers is regarded as the minimum needed to accurately capture human motion

it. There aren't that many people using it yet, but the interest is certainly there.'

'Games seems to be a big driver right now,' agrees Ascension Technology's Jack Scully, 'although the people who are making the animations for movies, television and commercials are holding their own.'

Apart from the benefits to realism, another crucial factor in the increasing use of the technology is its potential for speeding up the production process. As games get more complex and the graphics more demanding, anything that facilitates the character animation phase is welcome.

LeCoe again: "We've seen customers who are collecting over 1000 moves for a game – and this is many characters doing many different moves, some of which are unique to single characters. Motion capture is probably the only way you could do that in a reasonable timeframe."

Medding agrees. 'You can capture 30 or 40 moves in a day. I don't know how long it takes people to animate or keyframe things to the same quality, but my feeling is that it must take longer than a day.'

Swanick is more cautious, pointing out that it's not an instantaneous solution and coupling the data set to the desired animation is still time consuming, but he still concludes that it's a time saver. 'It's swings and roundabouts. A good computer animator will probably do one or two animations a day, while we can probably get away with 10, so it is faster in a way. The way you've got to mould them all together makes them more complex, so you can lose your advantage. But you'll still produce more with motion capture.'

The history of motion capture can be traced as far back as the late 1800s, to experiments performed by photographic pioneer Eadweard Muybridge and others involving banks of cameras operated by tripwires. Such experiments were performed on behalf of medical science or the military (and, famously, for a bet to see whether all four of a horse's legs leave the ground at full gallop). But it wasn't until Max Fleischer patented the rotoscope in 1917 that the benefits of motion capture were really felt.

Traditional 2D cel rotoscoping simply depended on an animator tracing over individual frames of film. The increased realism achieved by this process, especially in terms of human and animal motion, plus the benefits of speedier production, saw

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the method being increasingly used by animation studios such as the Fleischer Brothers and Disney towards the middle of the century.

By the time the pioneering years of computer graphics had been reached in the late 1970s and early 1980s, a lot of the methods used for character animation were still derived from 2D rotoscoping. Moreover, they were still highly labour intensive, involving either projecting video images onto a computer screen to pose a character's keyframes, or manually encoding points on a 3D model.

All current methods of motion capture rely on markers being placed on a performer's joints. Once motion has been filmed or analysed, a data set is produced to interpret that movement into Cartesian co-ordinates (xyz positions), which provide the spatial location of each of those markers. This information is then cleaned up if necessary and ported into one of the major animation packages, typically Alias, Wavefront or Softlmage.

One of the earliest ways of capturing human motion and applying it directly to a 3D model involved prosthetic devices strapped onto the performer's body. A series of armatures were connected by both rotational encoders placed at the joints and linear encoders placed along the limb. Although this results in an exceptionally clean realtime data set, the physical problems of performing in what amounts to an exo-skeleton have severely curtailed its use.

Another method, which looks like becoming an evolutionary dead-end, is based on acoustics. Three receivers are arranged in a triangle around the capture space, with audio transmitters strapped to the performer's body (again, at the joints). The transmitters are then sequentially triggered to produce a sound, with the receivers calculating the time it takes for each signal to reach them and triangulating a point in space for each marker.

Magnetic systems

he genealogy of magnetic motion capture is military, with systems such as Ascension Technology's Flock Of Birds and Polhemus' Fasttrack derived from magnetic tracking sensors developed for installation in aviation head-mounted displays.

The way they work is very similar to acoustic systems, although here the receivers are placed on the joint positions of the body and measure positional and orientational data with respect to a transmitting antenna producing a pulsed DC signal. The Flock transmitter consists of a core about which the x, y and z antennae are wound,



Magnetic motion capture is relatively cheap, but the wires inhibit movement

concentrically, while the receiver comprises three orthogonal antennae sensitive to DC magnetic fields.

In operation, initially all transmitting antennae are shut down, enabling the receivers to measure the x, y and z co-ordinates of the earth's magnetic field. Then the x, y and z transmitter antennae are fired up sequentially, with the receivers measuring the values along all three of their axis. This results in 12 measured values per receiver per cycle,

with a differential amplifier automatically subtracting the measured component of the Earth's magnetic field from the receiver values. Each receiver can make up to 144 measurements per second and the unit can track up to 30 of them simultaneously.

As Ascension's Jack Scully points out, it's a system with many advantages: 'It puts out

a field that is not blocked or occluded if there is some obstruction between its receiver and transmitter. As long as that body is not metallic we don't lose any data. The other big advantage is that the animator and director can see in realtime how a session went. They can see a wireframe on a screen and they can review it from there. The third advantage is the fact that the magnetic system is probably a quarter of the price of the

While price is, of course, an important consideration, magnetic systems do have their drawbacks. Probably the main one is the cabling necessary to link every single receiver to the transmitter, which effectively precludes fast action takes. Also, any metal in the vicinity can cause ferrous interference, producing unwanted spikes in the data. The capture area is also guite small - the Flock can only capture in a 16-foot hemisphere.

This problem can be surmounted using zoning. 'You can really cover a room with a second transmitter,' says Scully. 'Only one will be on at a time, and an actor will either be in close





Actors' movements are transformed into slick animations: a US TV ad for Monopoly (top) and a rapping skeleton (above)

proximity to transmitter A or B, not both simultaneously. So if he walks out of the range of transmitter A, we turn it off and turn B on so he keeps on going.

Despite the slower capture rate, the realtime delivery is impressive. The lag, defined as the time difference between the start of a physical rotation of the receiver and the start of the output of its correct measurement, is a mere 8.5ms for position and orientation measurements and an even faster 4ms for angular output.

Motion capture *** ***



The main drawbacks are that the resulting data set is not collected simultaneously and that the capture area is limited by the speed of sound. Echoes cause additional problems, the sampling rate is limited and the performer is hampered by the cabling necessary for the system's operation.

The two pre-eminent capture systems at the moment are magnetic (see page 61) and optical (see page 63). The magnetic

system suffers from the same tethering problem as the acoustic one (as well as from the possibility of ferrous interference) but its relatively low cost and ability to produce realtime data ensure its continued survival. Optical systems use multiple cameras to track reflective

markers. Although they're expensive, and there are problems with occlusion of the markers, they've had a great impact on the industry because of their tetherless operation, high-speed capture ability (up to 240fps) and potential for multiple simultaneous captures.

Traditionally, motion capture

has recorded positional data, simply translating the positions of markers into 3D spatial co-ordinates. The resulting data is then used to drive the control points of an inverse kinematic skeleton through a loose coupling arrangement. Loose coupling was found to be necessary because the markers were only monitoring the way the skin was behaving in motion, not the actual joint itself, and the correlation between the marker's motion and the desired motion of the skeletal joint was sometimes rather wayward. Therefore, the data set was only allowed to influence the skeleton, each joint of which had to be placed under certain constraints.

Accepted wisdom is that 23 markers is the minimum for human animation. '23 or 25,' says Swanick. 'You can probably get away with one less on the head, but the thing is, you want to define all your angles and your movements as easily as possible and not have to worry about it or have massive points to attach the model to. 23 without a proper ankle/toe arrangement, 25 with a proper one.'

Once you get to that point, though, the amount of 3D data being recorded





Delphine's Flashback used rotoscoping, while Sega's Virtua Fighter (left), Namco's Tekken (right) and Lore Design's Highlander all employ modern motion capture techniques

starts to get rather unwieldy, and it becomes much easier to simply store the data set as a series of bone rotations around the skeleton's various joints.

Rotational data, such as that used in the Acclaim system (see page 65), new

between a performer's body segments (typically numbering in the 20s and roughly analogous to the human skeleton) can be directly used to drive a body segment model. From there, if need be, it can be massaged using inverse kinematic solutions.

'Capturing the data has actually become less of a challenge,' says LeCoe. 'The systems are pretty well understood, the marker sets are understood, and our optical system can give you a lot of

> detailed, clean displacement data. The problem was, when you tried to move the displacement data over to animations you ran into scaling and inverse kinematic issues. Now we're releasing rotational output so you can get from our system either displacement

or body segment orientations. The filters are being put in place by Wavefront, Alias and Softlmage, so suddenly the 3D animators are going to have an easier time.'

Dean LeCoe suggests that motion capture is now growing up. If the diffusion of rotational approaches into turnkey packages marks the end of puberty, other developments are going to catapult it into fully fledged adulthood.

Although magnetic motion capture seems to be gradually diminishing into obsolescence, it would be wrong to regard optical systems as their natural successor. In some senses, especially considering the price differential, they are complementary technologies rather than competing ones. As Jack Scully says: 'A couple of our customers, at Sega, for instance, use the magnetic tracker for their everyday quick

Sega, for instance, uses the magnetic tracker for quick-and-dirty work, but for high-speed manoeuvres they'll go to an optical one'

Motion Analysis software, and the Vicon 370, is also more accurate than simply tracking joint positions, leading to far more fluid animation. It's automatically derived from positional data using biomechanical algorithms and then ported into animation software where the angular motion

and dirty work and then, when they want to do some high-speed manoeuvres like martial arts, they'll go to an optical one.'

Development in both disciplines continues. 'One of the complaints about the magnetic system has been the large number of cables and wires and power

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Optical systems

ptical motion capture has a different heritage to magnetic systems, originating in biological science labs as a tool to study flow dynamics. Its use in the entertainment industry is comparatively recent, with Dean LeCoe dating it to a radical shake up in the industry about two years ago.

'It was less of an invention and more of a convergence,' he says, 'between Silicon Graphic computers that had visual display capabilities and software including Wavefront, Softlmage and Alias which mortals could actually run.'

Optical set-ups, such as Motion Analysis' ExpertVision HiRes 3D system, are not cheap, routinely costing three to four times more than magnetic capture technology. The principle is simple: an array of high-resolution cameras

equipped with strobed LED on-axis lighting sources tracks directionally reflective balls attached to the performer. The raw data is then trigonometrically analysed in proprietary software and a stream of 3D spatial co-ordinates or rotational data produced.

Despite its cost, optical motion capture has developed steadily due to its

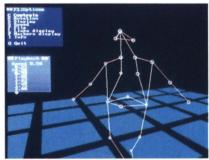




The downside is the risk of ghost markers (if the cameras are misaligned), scaling problems, calibration difficulties, and processing time. 3D optical motion capture is also not yet quite a realtime process, though 2D facial capture systems based on the technology now are. Probably the most serious problem, though, is occlusion.

'If you fall over onto the floor and you block a marker you'll lose it because the cameras can't see it,' explains Swanick. 'But saying that, you only lose it for a short period of time, a fraction of the take, and you can do some processing - curve analysis and curve repairs - to regain it.'









Sheffield-based Gremlin Interactive is one of the first UK software houses to establish a motion capture studio, using Motion Analysis' HiRes System. Sheffield Wednesday footballer Chris Woods' movements were captured (centre, centre left) for inclusion in Gremlin's forthcoming Actua Soccer. Gremlin's studio has already been used by other companies, notably for the recent 'virtual reality' television ad for Kit Kat

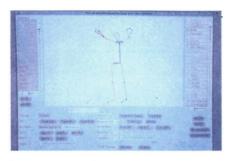
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supplies,' says Scully. 'From this summer you will see all of the cords and wires ending up in a single user-friendly chassis. That will have a user-friendly interface on the front and interfaces to the host computer via SCSI or Ethernet, probably an RS485, so the user will be able to pick which interface he wants to use and send the data right on to his SGI computer.'

In the optical camp, the current goal is to increase the size of the capture area. Although Motion Analysis' capture area is approaching 20x20ft, the push is on for even greater volume. The limiting factor, though, is the resolution of the cameras. If the cameras view a marker as less than a pixel in size, the data produced is going to be nowhere near accurate enough for smooth animation.

High-definition cameras are easing onto the market, but their high cost





Data processing is a crucial part of motion capture. Data is displayed in stick form for easy manipulation. Points that have been obscured can be corrected and other details added

industry on the verge of Plug & Play, more and more character animation is going to be up to the standard of the likes of Alien Trilogy. However, other developments in complementary technology will soon make even that apex seem primitive.

£300,000) the USAF is known to have acquired one, and there are rumours that Acclaim has taken the same route.

But fluid character animation may well prove to be one of the least impressive of motion capture's by-products. Some of the technology arose out of tracking systems for HMDs, and many people are now starting to talk about it returning to its roots and throwing up VR applications.

'I think motion capture is going to move into a more personal realm,' opines LeCoe. 'There's a great future in, for example, game interfaces where the motion of the players themselves is captured, allowing them to transcend having to twitch fingers to press buttons and pull joysticks and instead physically participating in the game – bringing more of yourself into cyberspace.'

There's a great future in game interfaces where the player's motion is captured – bringing more of yourself into cyberspace

(around the \$15,000 to \$20,000 mark) currently prohibits their use in motion capture. That will change, and with the current breakthroughs taking place in HDTV, they should deliver a whole new magnitude of resolution capability. Add to that the migration of technology from ranging satellites into the field and it's a reasonable assumption that in a couple of years' time motion capture will be operating in football-sized stadiums.

As well as increasing the capture area, there's another hurdle waiting to be cleared. 'The next frontier,' says LeCoe, 'is multiple-character simultaneous capture and don't let anybody tell you it's easy. First you saw things like the Acclaim promotion, where you had two people with guns walk into the area separated by five or six feet. The next leap forward was that Motion Analysis did some kick boxing stuff, and to do that interaction with all the physics and neurology of it by keyframe is almost impossible. If you capture the kinetics of the people you get a much better result. Now we're trying to get to where people grapple with each other and you can still peel them apart, and that takes a lot of intelligent tracking and tools.'

It's probably not too far off, though. When people talk about progress in motion capture they tend to speak in terms of months rather than years. With the

One of those developments is full-body scanning. Cyberware recently rolled out the WB2 and WB4, both of which are capable of a full-colour scan of an object in a capture area 2m by 1.2m. The scanners use up to four lasers to triangulate depth based on reflected light and can complete a whole body scan in about 12 seconds. The results are impressive, producing a single-skin model ready for direct porting into animation packages. Although the technology isn't cheap (the WB4 is around





Cyberware's full body scanner (top right). A facial scanner was used to capture the data for this 3D portrait (left). Facial markers can be used to capture human expressions in realtime (right)

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The Acclaim approach

arlier this year, Edge was invited to visit Acclaim's motion capture studio, a gymnasium-sized set-up located in the basement of the company's spacious HO in sleepy Glen Cove, New York.

The studio is dominated by the main capturing stage, which is 59 feet long, 43 feet wide and 24 feet high. There's also a smaller scanning room, used to capture facial expressions and small hand movements. Although specifically set up for head scanning, it's currently being converted for body scanning and close capturing. Acclaim will eventually be able to put as many as 300 sensors on an actor's face to record facial animation and lip-sync.

Because Acclaim uses optical technology, the main stage is completely clad in black rubber. The cameras are high-res, rigid-mounted units, custommade by TI. Acclaim's proprietary system comprises four black-and-white capturing cameras plus two slaves, used by the director to assess the performance.

The capturing process itself is fairly straightforward. Performers don black suits featuring an adjustable number of rubber sensors (from 10 to 150), each of which has a ball of Scotchlite tape at its end to reflect light back to the source. Capturing begins with a video shoot, after which each camera's output is digitised simultaneously to create a raw point file. Proprietary biomechanical algorithms are then applied to produce the bone rotation data.

As Acclaim's Wes Trager attests, bone rotation has many advantages: 'It gives us really high-resolution character animation. What we did was to create a new format for the skeleton and the motion data to drive the skeleton, and then have the industry adopt these formats so that our customers have an easy means of getting their data into their particular software package.

These algorithms are clearly the key to Acclaim's highly realistic end product. Gamers will be able to see how they perform in a gaming environment with





Acclaim's games make use of both motion capture and bluescreen techniques

the release of Frank Thomas 'Big Hurt' Baseball and the much talkedabout Alien Trilogy.





















Acclaim's forthcoming Alien Trilogy. First, Vasques' face is scanned and some basic sweeping movements captured optically. This data forms the basis for a wireframe model, to which textures are then added

